

EXHIBIT 1

Part 2

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1 Q Any others that you know of? 2:50PM
 2 A I'm not sure what the cutoff threshold is and when
 3 they have to, what size facility has to produce the
 4 consumer content report.
 5 Q Have you seen any of those from the city of 2:50PM
 6 Tahlequah?
 7 A I might have reviewed them. I don't recall
 8 specifically.
 9 Q I didn't see them in your considered materials.
 10 A I don't think I -- I mean, if I looked at them, I 2:50PM
 11 didn't consider it as part of the overall report.
 12 Q Wouldn't you consider that to be an important
 13 source of information to determine whether or not there
 14 really is a disinfection byproduct problem in the
 15 Illinois River Watershed? 2:51PM
 16 A I think the specifics as to how each water
 17 treatment plant is constructed and operated is very
 18 important relative to the disinfection byproduct
 19 production, but I didn't go into that level of detail
 20 for purposes of this report. 2:51PM
 21 Q Well, wouldn't you agree with me, though, sir,
 22 that if the city of Tahlequah, the people who actually
 23 run their treatment facility, who are required by law
 24 to make reports to their consumers about their water
 25 quality, and especially DVPs, report that there's 2:51PM

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1 problem, then there's no problem? 2:51PM
 2 MR. BLAKEMORE: Object to the form.
 3 A Again, going back to my understanding of where the
 4 Stage 2 disinfection byproduct rules currently are at,
 5 these facilities are an information gathering stage and 2:52PM
 6 at what point that information needs to be documented
 7 in the consumer confidence report, I'm not sure when
 8 that happens, but that's my rationale for why there
 9 could be potential health hazards that aren't being
 10 reported as legally mandated. 2:52PM
 11 Q Is there anybody in the Illinois River Valley who
 12 is -- or lake -- consuming water from Lake Tenkiller
 13 who is getting cancer from drinking the water?
 14 MR. BLAKEMORE: Object to the form.
 15 A I'm sorry. 2:52PM
 16 Q Is there anybody in the Illinois River Watershed
 17 who is getting cancer from drinking the water?
 18 MR. BLAKEMORE: Object to the form.
 19 A I don't think I'm an expert in that particular
 20 aspect. 2:52PM
 21 Q Who on the state's team would be the person to
 22 direct that question to?
 23 A Probably Dr. Teaf, from my understanding.
 24 Q We'll see him next Wednesday or Thursday. And
 25 then if you would turn to about the fifth page in, it 2:53PM

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1 says, "Is There a Problem? Substantial number of water 2:53PM
 2 bodies with taste and odor problems." Do you see that?
 3 A I'm sorry, which page?
 4 Q Page 0005. Talking about Eucha, Spavinaw,
 5 Thunderbird, Wister and then question mark, others? 2:53PM
 6 A Uh-huh.
 7 Q Do you have any information that there have been
 8 any taste and odor complaints by customers of water
 9 treatment facilities that draw water either from the
 10 Illinois River or from Lake Tenkiller? 2:53PM
 11 A I believe I've at least heard that there were
 12 taste and odor issue for some of the water treatment
 13 plants, but I can't document that.
 14 Q Who told you that?
 15 A I can't recall. 2:54PM
 16 Q If you'd look at Page 0014. Do you know what SWS
 17 stands for?
 18 A Surface water systems. It's just a guess.
 19 Q Okay. And do you see the asterisk that says, "All
 20 currently exceed ten micrograms per liter"? 2:55PM
 21 A Yes, sir.
 22 Q And this refers to what?
 23 A Again, it didn't remind us, but I would assume
 24 Chlorophyll A.
 25 Q Chlorophyll A? 2:56PM

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1 A That's a guess. I don't know. 2:56PM
 2 Q Do you think whether there's chicken production in
 3 Tom Steed?
 4 A I do not.
 5 Q Is there chicken production in Rocky Lake? 2:56PM
 6 A I do not know.
 7 Q What about Liberty Lake?
 8 A I do not know.
 9 Q Lake Thunderbird?
 10 A I do not know. 2:56PM
 11 Q What about Lake Lawtonka?
 12 A I do not know.
 13 Q Lake Ellsworth?
 14 A Do not know.
 15 Q Arcadia Lake? 2:56PM
 16 A I do not know.
 17 Q Carl Blackwell?
 18 A Do not know.
 19 Q Humphreys Lake?
 20 A Do not know. 2:56PM
 21 Q Guthrie Lake?
 22 A Do not know.
 23 Q Greenleaf?
 24 A Do not know.
 25 Q Fort Supply? 2:56PM

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1 A Do not know. 2:56PM
 2 Q Claremore?
 3 A Yes, I believe so -- oh, I'm sorry. You skipped
 4 over -- you skipped Eucha.
 5 Q Because there is chicken production there. 2:56PM
 6 A Yes. I do not know in Claremore.
 7 Q There's chicken production in Spavinaw, too. I
 8 skipped over it.
 9 A Okay.
 10 Q What about Claremore? 2:56PM
 11 A I don't know.
 12 Q And what about Boomer Lake?
 13 A I do not know.
 14 Q You understand if I return to the office with
 15 anything in this box, I'm in deep trouble with my 2:57PM
 16 staff.
 17 MR. ELROD: Do we need a break?
 18 THE VIDEOGRAPHER: Yeah.
 19 MR. ELROD: Let's do it right now.
 20 THE VIDEOGRAPHER: We are now off the 2:57PM
 21 record. The time is now 2:58 p.m.
 22 (Following a short recess, proceedings
 23 continued on the record.)
 24 THE VIDEOGRAPHER: We are now back on the
 25 record. The time is now 3:03 p.m. 3:03PM

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1 Q Would you tell me what King No. 9 is that I placed 3:03PM
 2 in front of you?
 3 A Looks like a draft of Dr. Engel's work.
 4 Q So this is a draft of his report in this case?
 5 A Yeah -- yes. 3:03PM
 6 Q And this was dated 4-9-2008, correct?
 7 A Yep.
 8 Q Do you know why -- did he send this to you?
 9 A I believe so, yes.
 10 Q And do you know why he sent it to you? 3:03PM
 11 A Just so I would have some more background in terms
 12 of developing the remedial alternatives.
 13 Q Ten, quite frankly, may be a series of things that
 14 are not necessarily related to each other. My question
 15 to you is: What are these documents? 3:04PM
 16 A Well, on 40.0001 through 0004, it's just some
 17 calculations I was making.
 18 Q These are calculations you made?
 19 A Yes, based on information from others.
 20 Q Okay. Then what's the next document? 3:05PM
 21 A The next document, 41, just looks like a table of
 22 contents.
 23 Q Is this a draft of your report?
 24 A Table of contents, yeah.
 25 Q Okay. So if we sat this draft down next to the 3:05PM

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1 final report, would we see dramatic changes or 3:05PM
 2 differences?
 3 A Oh, probably move some of the technologies around.
 4 Might have changed some of the headings, deleted the
 5 preferred remedy. 3:06PM
 6 Q You deleted the preferred remedy?
 7 A Section, yeah.
 8 Q Why? Explain that.
 9 A I'm not sure we had enough information and enough
 10 definition of the overall issues to really develop, 3:06PM
 11 fully develop a preferred remedy.
 12 Q You sent this draft to the law firm of Motley Rice
 13 in South Carolina, is that true?
 14 A I believe so.
 15 Q And what would have been the date of its 3:06PM
 16 production?
 17 A The e-mail records should be clear on that.
 18 Q All right. And did you receive any comments from
 19 the law firm of Motley Rice?
 20 A We had discussions, certainly. 3:06PM
 21 Q Did you make any changes between this draft and
 22 the final report based on conversations you had with
 23 the lawyers at Motley Rice?
 24 A Yeah, I mean, we certainly move things around.
 25 Q What about substantive conclusions? 3:07PM

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1 A Not so much conclusions, it was more how much 3:07PM
 2 information do you have, how strongly do you -- can you
 3 recommend this alternative or how much -- what's the
 4 basis of the data for coming to these conclusions.
 5 Q Did any lawyer in this case tell you not to 3:07PM
 6 consider cattle impact?
 7 A No.
 8 Q Why did you choose not to consider cattle impact?
 9 A Well, primarily, Dr. Engel didn't -- that wasn't a
 10 real big contributor to the overall phosphorus issue, 3:07PM
 11 so that was the main reason for not -- for lumping it
 12 in with the other best management practices.
 13 Q Any other reasons you didn't consider cattle
 14 impact?
 15 A Not really, no. 3:07PM
 16 Q What was your role in this case?
 17 A To develop the cost associated with -- or conduct
 18 a feasibility study to, you know, talk with the
 19 experts, develop a framework to put together the
 20 various remedial alternatives and screen out those that 3:08PM
 21 weren't applicable.
 22 Q Okay. If there had been a remediation action that
 23 you personally considered to be an important thing to
 24 discuss, were you the final decision maker as to
 25 whether that ought to go in your report? 3:08PM

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1 A Yeah, I was the final decision maker, yeah, as far 3:08PM
2 as everything within my report, yeah, and the way it
3 was presented, yes.

4 MR. ELROD: Okay. I pass the witness.
5 Thank you, sir. Thank you for your patience with 3:08PM
6 me.

7 A Thank you.

8 MR. ELROD: Give me about one minute here.
9 I do have one other question that I failed to ask.
10 I'm sorry. 3:09PM

11 We didn't go off, did you?

12 Q So you have any information that a release from
13 any particular grower, chicken grower, has caused
14 response costs?

15 A No, sir. 3:09PM

16 MR. ELROD: That's all.

17 DIRECT EXAMINATION

18 BY MR. BOND:

19 Q Mr. King, my name is Michael Bond and I represent
20 the Tyson defendants in this case. I'm going to jump 3:10PM
21 around a little bit because Mr. Elrod did a pretty good
22 job of covering most of the things I want to talk
23 about, but I'll try to make it understandable when I'm
24 moving to another subpart so this can go smoothly. But
25 have you ever given a deposition before? 3:11PM

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1 A No, sir. 3:11PM

2 Q Have you ever testified in court before?

3 A No, sir.

4 Q Okay. Has any work you've ever done with respect
5 to any environmental site been relied upon in a court 3:11PM
6 of law?

7 A It's been used for administrative orders by
8 consent by EPA, but I'm not sure if that answers your
9 question.

10 Q Okay. Have you ever written an expert report like 3:11PM
11 the one that you've done in this case?

12 A An expert report, not that I recall, no.

13 Q Okay.

14 A For use by --

15 Q In a court of law? 3:11PM

16 A Not in the court setting. For use by attorneys,
17 but not for --

18 Q Have you ever provided any recommendations to the
19 way a particular environmental issue was to be handled
20 to a court of law? 3:12PM

21 A Again, not directly to a court. Certainly to
22 attorneys, but not that I recall.

23 Q Okay. The exhibit that contains all of your
24 e-mails?

25 A Uh-huh. 3:12PM

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1 Q Let me see what number that was. 3:12PM

2 MR. BLAKEMORE: Report.

3 MR. McDANIEL: Four.

4 Q With respect to Exhibit 4, when you reviewed that,
5 were you able to determine whether or not that is all 3:12PM
6 the e-mails that you have with respect to your work on
7 this matter?

8 A It looks complete. There might be others, but it
9 looks fairly complete.

10 Q Okay. When you produced the materials from your 3:12PM
11 files in this case to the lawyers that represent the
12 state, was it your intention to produce to them all of
13 your e-mails with respect to this file?

14 A My intent was to produce all the relied-upon
15 e-mails so anything with the experts that I had, or 3:13PM
16 counsel.

17 Q What other type of e-mails would you have?

18 A The e-mails, internal e-mails to staff and things
19 like that.

20 Q That package of e-mails only contains e-mails from 3:13PM
21 the year 2008. Did you notice that when you looked
22 through that?

23 A Yeah. I thought I had -- there might be e-mails
24 before that, I just -- they probably weren't anything
25 substantive in terms of -- well, the scope of work 3:13PM

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1 probably should be there. I'm just not sure why I 3:13PM
2 didn't capture that.

3 Q Do you know the first date you started working on
4 this matter?

5 A Well, again, I've worked on this project in 3:13PM
6 different capacities so -- with respect to this
7 project?

8 Q Yes.

9 A This report?

10 Q I mean, with respect to your report, which is 3:14PM
11 Exhibit 2.

12 A I don't recall the exact start date, but I think
13 it was fall of 2007.

14 Q Okay. Do you recall engaging in any e-mail
15 correspondence with attorneys representing the state or 3:14PM
16 experts retained for this litigation in 2007?

17 A I can't remember the date of when we had the first
18 meeting I attended in Tulsa. And prior to that, there
19 might have been some internal. develop a scope of work.
20 time and cost estimates to do this work. e-mails that I 3:14PM
21 don't see here.

22 MR. BOND: Okay. I would ask that there
23 be some effort made to look at 2007 e-mails that
24 relate to work on this matter.

25 MR. BLAKEMORE: Okay. 3:15PM

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1 MR. BOND: And if they're found they be 3:15PM
 2 produced and we can discuss them in the next
 3 deposition.
 4 Q Mr. King, you're not a toxicologist, correct?
 5 A No, sir. 3:15PM
 6 Q You're not an epidemiologist?
 7 A No, sir.
 8 Q And you're not a physician?
 9 A No, sir.
 10 Q You have no medical training? 3:15PM
 11 A No, sir.
 12 Q And you're not a limnologist?
 13 A No, sir.
 14 Q You're not a hydrogeologist?
 15 A No, sir. 3:15PM
 16 Q And you're not an aquatic ecologist?
 17 A No, sir.
 18 Q What is your area of expertise as it pertains to
 19 this case?
 20 A Chemical engineering and environmental 3:15PM
 21 engineering.
 22 Q What chemical engineering tasks have you done in
 23 this case?
 24 A Well, primarily looking at the fate and transport
 25 and cost estimates based on the practice that I've been 3:15PM

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1 doing over the last 20 or so years, at least a good 3:16PM
 2 portion of those 20-odd years --
 3 Q Okay. And let me break that down a little bit.
 4 You've looked at fate and transport of what in this
 5 case? 3:16PM
 6 A Primarily phosphorus.
 7 Q Okay.
 8 A And nitrogen.
 9 Q In what capacity did you look at them?
 10 A Primarily to understand what the primary transport 3:16PM
 11 mechanisms are and to understand which experts were
 12 looking at those mechanisms in more detail and to
 13 understand what potential remedial measures might be
 14 implemented. And then to put together a framework
 15 together with the experts to try and quantify costs 3:16PM
 16 associated with those remedial technologies.
 17 Q Are you offering a fate and transport opinion in
 18 this case?
 19 A No, sir.
 20 Q Okay. So what chemical engineering tasks did you 3:17PM
 21 perform with respect to fate and transport?
 22 A Again, understanding the mechanisms of fate and
 23 transport, I guess, insofar as they relate to the
 24 remedial alternatives.
 25 Q So are you relying on your past experience? 3:17PM

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1 A To a degree. I mean, I've had similar experiences 3:17PM
 2 on the Kalamazoo River, the Rouge River, watersheds in
 3 terms of understanding a fate and transport of
 4 chemicals through the environment and ways to mitigate
 5 the transport of various chemicals. 3:17PM
 6 Q Okay. What about specific analysis of the patent
 7 transport of bacteria, phosphorus or total nitrogen?
 8 A Of those three, phosphorus is the predominant
 9 chemical that had the most to do with fate and
 10 transport in terms of the feasibility study and the 3:18PM
 11 costs put together. Then I would say that the nature
 12 phosphorus, being it's conservative, doesn't
 13 volatilize, it travels from one media to the next,
 14 usually associated with suspended particulate
 15 fractions, similar to PCBs, which I've got a good deal 3:18PM
 16 of experience with from the Kalamazoo River.
 17 Q Are you talking about elemental phosphorus?
 18 A I'm talking about total phosphorus basically.
 19 Q Okay. So in your report when you use the word
 20 "phosphorus," you're talking about total phosphorus? 3:18PM
 21 A Yes.
 22 Q Okay. What background do you have with regard to
 23 reducing the amount of nutrients in water, specifically
 24 orthophosphate and total nitrogen?
 25 A Oh, I've done a fair number of wastewater 3:19PM

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1 treatment projects, which is the engineered reduction 3:19PM
 2 of -- of nitrogen and phosphorus in a controlled
 3 system.
 4 Q Okay. And I'm sorry -- go ahead.
 5 A And then also done work with respect to best 3:19PM
 6 management process and storm water control and bank
 7 stabilization issues.
 8 Q Okay. Any background with regard to runoff of
 9 nutrients from the land application of the poultry
 10 litter? 3:20PM
 11 A Prior to this project?
 12 Q Yes, sir.
 13 A No.
 14 Q How about any background in the runoff of
 15 nutrients from the land application of any animal 3:20PM
 16 manure?
 17 A I think there was components of that with respect
 18 to the Rouge River watershed, but not to a great degree
 19 for this type of agricultural setting.
 20 Q What components? 3:20PM
 21 A Just the agricultural animal waste, urban runoff,
 22 suburban runoff type.
 23 Q What particular animal waste?
 24 A Domestic pets, but not a lot. Not agricultural --
 25 well, there's some agricultural within the Rouge River 3:20PM

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1 watershed body, but not a substantial number. 3:21PM
 2 Q Do you recall a specific type of animal?
 3 A No. More a category of just agriculture as
 4 opposed to specific animals.
 5 Q All right. Is your role in this case to provide 3:21PM
 6 cost estimates for remediation alternatives?
 7 A Yes.
 8 Q Okay. Is your role in this case designing
 9 remediation alternatives?
 10 A Only as to the extent necessary to develop the 3:21PM
 11 cost estimate, conceptual level design.
 12 Q Okay. Let me understand this. In your report,
 13 who designed these remedial options in your report?
 14 A The -- you mean in conjunction with conversations
 15 with the experts. 3:21PM
 16 Q Okay. How much of it was you and how much of it
 17 was them?
 18 A I don't know if I could put a percent on that, but
 19 in terms of putting together the cost, that was all me.
 20 Q Okay. With respect to the actual options, was it 3:22PM
 21 more the other experts than you?
 22 A I would say I relied heavily on the other experts
 23 to develop the initial list of remedial alternatives
 24 and then to narrow that list down based on the criteria
 25 that I documented in the report. 3:22PM

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1 Q You spent 450 to 500 hours on this report, 3:22PM
 2 correct?
 3 A Yes.
 4 Q How many hours were associated with the cost
 5 estimation part of it? 3:22PM
 6 A I didn't break it out that way.
 7 Q More than half?
 8 A I don't think so.
 9 Q Okay. So the remaining part of your time,
 10 whatever -- let me strike that. Whatever part of your 3:22PM
 11 time was not associated with cost estimates, was
 12 associated with you communicating with other experts
 13 about remedial options?
 14 A Yes. And -- and reviewing the different
 15 literature to develop remedial alternatives. 3:23PM
 16 Q Your role in this case is not to provide an
 17 opinion on causation?
 18 A No, sir.
 19 Q Okay. And your role in this case is not to
 20 provide an opinion on risk assessment, is it? 3:23PM
 21 A No, sir.
 22 Q Okay. And your role in this case is not to
 23 provide the identification of environmental conditions
 24 in the field?
 25 A No, sir. 3:23PM

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1 Q On Page 6 of your report, just to give you an area 3:23PM
 2 of reference -- oh, you've got one. There's a
 3 statement in here that says, "All other medial action
 4 objections are predicated on the cessation of land
 5 application of poultry waste in the IRW." 3:24PM
 6 A Mm-hmm.
 7 Q What is your empirical basis for assuming the
 8 cessation of all litter use is required?
 9 A Primarily based on Dr. Engel's work that showed
 10 that there's a great deal of phosphorus within the 3:24PM
 11 system and based on just a mass amounts approach, that
 12 if you're currently showing injury and are predicting
 13 to show injury into the future without land application
 14 of poultry waste, that adding poultry waste is only
 15 going to make the problem worse and defeat some of the 3:24PM
 16 remedial alternatives that were specified herein.
 17 Q And so you're relying on Dr. Engel?
 18 A Yes, sir.
 19 Q Your entire report is based on the assumption that
 20 poultry litter is causing problems associated with 3:25PM
 21 bacteria, phosphorus and nitrogen in the watershed,
 22 correct?
 23 A Yes, sir.
 24 MR. BLAKEMORE: Object to form.
 25 Q If that assumption is not proven, then your report 3:25PM

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1 is basically useless in this case, correct? 3:25PM
 2 MR. BLAKEMORE: Object to the form.
 3 A I would say the report identifies alternatives
 4 that address each of those constituents of concern and
 5 that provides cost estimates to determine or to -- how 3:25PM
 6 much it would cost to remove a portion of those, those
 7 sources.
 8 Q But if poultry litter is not the source, then the
 9 remedial options discussed in your report, would they
 10 need to be implemented or not? 3:26PM
 11 A They are directed at poultry waste.
 12 Q Okay. So if poultry litter is not the source,
 13 then your remedial options are not needed?
 14 MR. BLAKEMORE: Object to the form.
 15 A I guess I'm having a hard time trying to -- if 3:26PM
 16 it's not the source, yeah, I guess I'd agree.
 17 Q Okay. Did you do any analysis on your own about
 18 the amount of litter that is necessary for crops to
 19 grow in the Illinois watershed?
 20 A Primarily I might have scratched out some 3:27PM
 21 calculations, but I was primarily relying on Dr.
 22 Johnson for that.
 23 Q Okay. Where did you scratch out these
 24 calculations?
 25 A I'm not even sure I did, but in the notes that 3:27PM

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1 we're talking about. 3:27PM
 2 Q Okay. So if you did, in fact, scratch out some
 3 calculations on that, that will be in the notes that
 4 hopefully we'll get?
 5 A Yeah, it would have only been from my own point of 3:27PM
 6 reference, it wouldn't have been something I relied on
 7 as part of this document.
 8 Q Did you do any analysis that would attempt to
 9 quantify the amount of poultry litter that is
 10 environmentally appropriate in the Illinois River 3:27PM
 11 Watershed?
 12 A No.
 13 Q Okay.
 14 A I'm not sure I understand the question, though.
 15 Q Okay. Do you know what bacteria was tested for 3:28PM
 16 with respect to the wells?
 17 A Total coliform. Beyond that, I'm not sure what
 18 other bacteria indicator or indicators were tested for.
 19 Q Are you offering an opinion as to whether or not a
 20 well is unsafe if it detects any level of bacteria in 3:28PM
 21 it?
 22 A Am I offering an opinion?
 23 Q Yeah.
 24 A As to whether it's unsafe. I am offering an
 25 opinion that it -- for purposes of this document, I 3:28PM

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1 have assumed that that is a contaminated well that 3:28PM
 2 needs action.
 3 Q Okay. For purposes of your report, if a well has
 4 any level of bacteria in it. Then one of your remedial
 5 options should be considered? 3:29PM
 6 A Yes, sir.
 7 Q Okay. With respect to the wells, do you know why
 8 they did not sample for nitrates?
 9 A I believe they sampled for nitrogen in several
 10 forms; nitrite being two of those forms. 3:29PM
 11 Q All right. At this time, are you offering an
 12 opinion as to the specific remedy the court should
 13 order in this case?
 14 A I'm offering several different alternatives
 15 that -- that would aid in reducing the impacts from 3:30PM
 16 poultry waste, including cessation.
 17 Q Well, if the court asked you right now which of
 18 the options that are contained in your report --
 19 A Uh-huh.
 20 Q -- it should order, which ones would you tell him? 3:31PM
 21 A Cessation. I would say drinking water replacement
 22 issues.
 23 Q With respect to that one, are you talking about
 24 wells?
 25 A Sorry. Residential well replacement or treatment. 3:31PM

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1 Q How many wells? 3:31PM
 2 A If cessation was implemented, it would be 190
 3 wells.
 4 Q What else would you tell the court?
 5 A Vegetative filter strips would be of value and 3:31PM
 6 with respect to the public water supplies, that the
 7 disinfection byproduct requirements would require --
 8 would potentially require upgrades to those facilities.
 9 Q Okay. Have you ranked these?
 10 A No. 3:32PM
 11 Q Are you going --
 12 A I did put a table together, obviously, on the
 13 criteria on section -- Section 6 that summarizes it. I
 14 did not rank them.
 15 Q So that's not a ranking? 3:32PM
 16 A No, sir.
 17 Q Do you intend to rank them?
 18 A Not at this time.
 19 Q Okay.
 20 MR. McDANIEL: Can we get a clarification 3:32PM
 21 which buffer option you're telling the court?
 22 Q Oh, sure. With regard to the vegetative filter
 23 strips, you proposed a couple of options?
 24 A Uh-huh.
 25 Q One was all streams and one was third order 3:32PM

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1 streams or higher, is that correct? 3:33PM
 2 A Yes.
 3 Q Which one would you tell the court it should
 4 order?
 5 A I guess I haven't determined an opinion as to 3:33PM
 6 which of those would be the most cost effective
 7 relative to the amount of phosphorus removed, and I
 8 guess I'd -- again, the other thing we're skipping over
 9 is Section 5, these different activities that could
 10 have merit and we just don't have enough information, 3:33PM
 11 so I guess I'm -- I guess I would recommend that some
 12 of these alternatives also be better developed or more
 13 information gathered to be able to put them into the
 14 analysis to do the ranking that you suggested. Develop
 15 all these technologies into a comprehensive alternative 3:34PM
 16 for preferred remedy.
 17 Q So let me try to summarize. If you get this
 18 wrong, please, you know, tell me. Right now, if asked
 19 by the court for what remedy you would propose, you
 20 would say the cessation of poultry litter? 3:34PM
 21 A Uh-huh.
 22 Q For 30 years?
 23 A That was the plain horizon that I was working with
 24 for this report.
 25 Q Correct? 3:34PM

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<p style="text-align: right;">Page 166</p> <p>1 A Yes. 3:34PM</p> <p>2 Q Okay. You would -- if you got cessation of</p> <p>3 poultry litter, then you would recommend well</p> <p>4 replacement for 190 wells?</p> <p>5 A Yes, sir. 3:34PM</p> <p>6 Q Okay. And you're not sure what you would</p> <p>7 recommend to the court with respect to vegetated filter</p> <p>8 strips?</p> <p>9 A Yes, sir.</p> <p>10 Q Okay. What about with regard to the lake? 3:35PM</p> <p>11 A Again, that some of the alternatives with respect</p> <p>12 to the lake are in the -- the other section. With</p> <p>13 respect to there's data gaps that need to be filled and</p> <p>14 part of it would depend on how effective the remedial</p> <p>15 technologies are in terms of addressing the phosphorus 3:35PM</p> <p>16 inputs to the lake, and I guess there's additional</p> <p>17 alternatives that may need to be developed to</p> <p>18 totally -- to come up with an optimal solution for the</p> <p>19 remedy.</p> <p>20 Q Okay. So with respect to the lake right now, 3:36PM</p> <p>21 you're not in a position to provide a definitive</p> <p>22 recommendation or proposal with respect to the lake?</p> <p>23 A No.</p> <p>24 Q Okay. Well, let's talk about drinking water from</p> <p>25 drinking water facilities. 3:36PM</p>	<p style="text-align: right;">Page 168</p> <p>1 A On the order of \$1 billion. 3:37PM</p> <p>2 Q \$1 billion?</p> <p>3 A Uh-huh.</p> <p>4 Q Okay. How did you get that? Can you just walk me</p> <p>5 through the calculation? 3:38PM</p> <p>6 A \$200 million for cessation, somewhere between \$956</p> <p>7 million to \$150 million for the vegetated filter</p> <p>8 strips. For replacement of the drinking wells, about</p> <p>9 \$6 million. And another \$1 billion for the drinking</p> <p>10 water systems, public drinking water systems. 3:38PM</p> <p>11 Q So that's significantly more than a billion, isn't</p> <p>12 it?</p> <p>13 A I said on the order of a billion, yeah.</p> <p>14 Q Okay. How did you determine the amount for the</p> <p>15 vegetative buffer strips right now? 3:38PM</p> <p>16 A I gave it as a range between \$150 million to \$956</p> <p>17 million.</p> <p>18 Q What number am I supposed to include in that</p> <p>19 calculation, the middle, the high or the low?</p> <p>20 A Again, the question is, how many properties would 3:38PM</p> <p>21 participate regardless if it's a first order or, you</p> <p>22 know, third order stream or buffer, so I think</p> <p>23 there's -- again, the best I can do there is a range.</p> <p>24 Q Did you endeavor to find out prior to issuing your</p> <p>25 report what type of participation you would get with 3:39PM</p>
<p style="text-align: right;">Page 167</p> <p>1 A Uh-huh. 3:36PM</p> <p>2 Q What is your recommendation to the court with</p> <p>3 respect to those?</p> <p>4 A Basically that disinfection byproduct rule is in</p> <p>5 the process of being implemented and that those 3:36PM</p> <p>6 facilities that have -- or that have exceedances based</p> <p>7 on that rule are going to have to upgrade and that</p> <p>8 those upgrades should be made.</p> <p>9 Q Okay. And if I understood your report correctly,</p> <p>10 are you talking about upgrades to 19 water facilities 3:36PM</p> <p>11 in the Illinois River Watershed?</p> <p>12 A Roughly, yeah.</p> <p>13 Q Is it another number than that?</p> <p>14 A The one thing I talked about that there was a</p> <p>15 subsequent system that probably double counted the 3:37PM</p> <p>16 capital cost and operating costs for that.</p> <p>17 Q Okay. All right. So based on what we just talked</p> <p>18 about right now, can you tell me how much that will</p> <p>19 cost? If the court asks, okay, how much is that going</p> <p>20 to cost, can you put a dollar figure on that? 3:37PM</p> <p>21 A The dollars are presented in Section 6.</p> <p>22 Q But based on what we just talked about right now</p> <p>23 in the scenario, if the court asks you today what your</p> <p>24 proposals would be, and then they asked you how much</p> <p>25 would that cost, what would your answer be? 3:37PM</p>	<p style="text-align: right;">Page 169</p> <p>1 respect to vegetated filter strips in the Illinois 3:39PM</p> <p>2 watershed?</p> <p>3 A No, I did not.</p> <p>4 Q Why not?</p> <p>5 A Because the technical issues are addressed fairly 3:39PM</p> <p>6 directly just based on the geography and the available</p> <p>7 information. The percent participation is just going</p> <p>8 to be a factor that will deduct from costs and increase</p> <p>9 the amount of phosphorus that continues to flow into</p> <p>10 the system. 3:39PM</p> <p>11 Q But did you refer to your report as something akin</p> <p>12 to a feasibility study?</p> <p>13 A It can, yeah.</p> <p>14 Q Okay. Is it a feasibility study?</p> <p>15 A Again, yeah, the intent was to create a 3:40PM</p> <p>16 feasibility study, but we don't go to the final</p> <p>17 preferred remedy and we don't rank the alternatives, so</p> <p>18 it falls -- doesn't meet the full definition.</p> <p>19 Q Why was the idea to not do a complete feasibility</p> <p>20 study? 3:40PM</p> <p>21 A Basically the time line that the court imposed to,</p> <p>22 basically, had to stop where we were at.</p> <p>23 Q Are you working on a complete feasibility study?</p> <p>24 A Not at this time, no.</p> <p>25 Q Has there been any discussions for you to complete 3:40PM</p>

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1 a feasibility study? 3:40PM
 2 A Not to complete feasibility study, no.
 3 Q Has there been a -- or are you working on a
 4 proposed plan?
 5 A No. 3:41PM
 6 Q Do you know of any expert that's working on a
 7 proposed plan?
 8 A No.
 9 Q Okay. You said, when Mr. Elrod was asking you
 10 questions, that a decision was made at some point in 3:41PM
 11 time for you to issue a separate report?
 12 A Uh-huh.
 13 Q Okay. And I gleaned from that that possibly this
 14 information was going to be contained in Dr. Olsen's
 15 report at some point in time? 3:41PM
 16 A That was Dr. Olsen's impression, I think, when he
 17 put together the table of contents, yeah.
 18 Q Okay. Why didn't -- why was the decision made for
 19 you to issue the report?
 20 A I don't know, honestly. 3:41PM
 21 Q Did you ever ask Dr. Olsen that?
 22 A No, I just assumed I was going to write the
 23 sections anyway so I didn't -- I didn't think of asking
 24 that question.
 25 Q Okay. Is this report at Exhibit 2 your complete 3:42PM

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1 disclosure of your opinion in this matter? 3:42PM
 2 A I'm not sure I understand the question.
 3 Q Does this report contain all opinions you have
 4 with respect to the Motley Rice project that's seen
 5 here? 3:42PM
 6 A Yeah.
 7 Q And when you wrote this, you understood that
 8 you're supposed to be complete in your disclosure of
 9 your opinions?
 10 A Yes. 3:42PM
 11 Q Okay. Have you relied on something in making your
 12 disclosure of your opinions? Did you reference it in
 13 this document?
 14 A I tried to, yes, to the best of my knowledge.
 15 Q You didn't try to hide anything? 3:42PM
 16 A No, sir.
 17 Q Section 7 of the report, I believe, contains the
 18 references you relied upon for purposes your report?
 19 A Uh-huh.
 20 Q Okay. And these are documents and communications 3:42PM
 21 that you relied upon in preparing the report, correct?
 22 A Yes, sir.
 23 Q If there were other documents or communications
 24 that you relied upon in preparing your report, they
 25 would -- you would have listed them, right? 3:43PM

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1 A Well, there's a substantial number of documents 3:43PM
 2 that don't appear here that are on the DVD of other
 3 considered materials, but I didn't substantially look
 4 at them or incorporate them in my conclusions.
 5 Q Okay. How did you make the determination as to 3:43PM
 6 whether to list a source in your report?
 7 A If it formed the basis of one of the statements
 8 that I made.
 9 Q Okay. If I find materials in your considered
 10 materials that are not listed there, what -- how do I 3:43PM
 11 know what weight you gave them?
 12 A I don't know. I don't know how to answer your
 13 question.
 14 Q But if they're in your considered materials, it is
 15 something you looked at with respect to this? 3:43PM
 16 A Yeah, uh-huh.
 17 Q Okay. Make sure I understand this correctly. If
 18 you specifically cited to it, it's listed in your
 19 report?
 20 A Yes. 3:44PM
 21 Q Okay. And we covered that. Did you discard or
 22 delete any information with respect to your work on
 23 this project?
 24 A No, sir, not knowingly.
 25 Q Okay. Okay. And did you also cite to or list all 3:44PM

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1 rules or regulations you relied upon in your report? 3:44PM
 2 A No, I did not cite all rules and regulations.
 3 Q Okay. So there are rules or regulations that
 4 pertain to your report that are not cited in it?
 5 A I guess I wouldn't say it that way. I mean, there 3:45PM
 6 are -- I guess what I meant to say is there are other
 7 rules and regulations that might be a part of these
 8 different remedial alternatives that I did not cite is,
 9 I guess, what I meant to say.
 10 Q Are copies or references to those rules considered 3:45PM
 11 materials?
 12 A Possibly.
 13 Q Do you know?
 14 A I believe so, yes.
 15 Q If you cited to it in your report, that is, if you 3:45PM
 16 cited to a rule or regulation in your report, did you
 17 give that rule or regulation more weight than a rule or
 18 regulation that you didn't cite in your report?
 19 A No, I tried to cite the rules and regulations that
 20 were relevant to the particular technology that I was 3:46PM
 21 talking about with respect to developing the cost
 22 framework.
 23 Q Okay. How many NPL cites have you worked on?
 24 A Two, three, maybe on the order of a half dozen.
 25 Q Okay. Are all of those NPL cites listed in your 3:46PM

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1 report? 3:46PM
 2 A I don't think so, no.
 3 Q Let's go through it again.
 4 A Are they NPL cites?
 5 Q Yeah. 3:46PM
 6 A No.
 7 Q It's not in your report?
 8 MR. BLAKEMORE: He provided his CV.
 9 Q Yeah, it's in his CV. I've got a copy of this CV
 10 here that I don't think I wrote anything important on. 3:47PM
 11 I'll mark your CV as Exhibit 11 to your deposition.
 12 You list some projects that you've worked on in here?
 13 A Uh-huh.
 14 Q Tell me which ones are CERCLA NPL cites.
 15 A Kalamazoo River. 3:47PM
 16 MR. BLAKEMORE: Does anyone else have
 17 another copy of that? I don't have one.
 18 Q I don't. When you say Kalamazoo, that is --
 19 A Kalamazoo River area, Portage Creek, Kalamazoo
 20 River Superfund site. 3:48PM
 21 Q Which page is that on? There are no page numbers.
 22 A Yeah, Page 2.
 23 Q And that's the one listed as "Project Manager,
 24 PCB-Contaminated River Project"?
 25 A Yep. 3:48PM

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1 Q Okay. 3:48PM
 2 A I believe the Saginaw River Project -- no, that's,
 3 I'm not sure what page, it's project manager,
 4 preliminary designing construction cost estimates for
 5 the Saginaw River. I believe that was the CERCLA site 3:48PM
 6 that was -- my role was as part of a natural resource
 7 damage assessment.
 8 Q Okay.
 9 A Somewhere in here should be the Packaging
 10 Corporation of America, which was another superfund 3:49PM
 11 site in L'Anse (phonetic), Michigan. I'm not sure all
 12 the projects I've worked on are actually on this.
 13 Well, there's definitely three superfund sites. And
 14 there's some state lead sites that the sites actually
 15 might not be on the superfund list, but the state regs, 3:51PM
 16 Part 307, follow similar protocols to the Fetterhoff.
 17 Q Is that from Michigan?
 18 A Yes.
 19 Q What is the site in that case?
 20 A What is the site in which case? 3:51PM
 21 Q This case.
 22 A The Illinois River Watershed?
 23 Q Yeah.
 24 A Basically, the watershed.
 25 Q So it's the entire watershed? 3:51PM

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1 A Those areas of the watershed that have been used 3:51PM
 2 for poultry waste disposal and those areas that have
 3 impacted -- been impacted by poultry waste disposal.
 4 Q Okay. So it's basic areas or is it the whole
 5 watershed? 3:51PM
 6 A I don't think we've defined it, but in general, I
 7 believe the discussion is limited to those areas that
 8 have been impacted by poultry waste.
 9 Q You've done a fair amount of work with CERCLA,
 10 haven't you? 3:52PM
 11 A (Nods head.)
 12 Q Don't you define the site in CERCLA specifically?
 13 A Generally and specifically it's -- the general
 14 definition is those areas that have been impacted by
 15 the contaminants of concern. 3:52PM
 16 Q Right. And in your experience in working with
 17 CERCLA, all of those sites are specifically identified?
 18 MR. PAGE: Object to the form.
 19 Q Correct?
 20 MR. PAGE: Same objection. 3:52PM
 21 A The -- my understanding of the superfund process
 22 is that they identify a risk, score the site and then
 23 apply a definition of the geographic area of that site
 24 based on a pretty limited, you know, knowledge at the
 25 time the site is scored. 3:53PM

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1 Q But they define the site, correct? 3:53PM
 2 A Geographically?
 3 Q Yes.
 4 A Yeah.
 5 Q Okay. Have you done a remedial investigation? 3:53PM
 6 A On this site?
 7 Q Yeah.
 8 A Me personally?
 9 Q Yeah.
 10 A No. 3:53PM
 11 Q Have you seen one on this site?
 12 A Just the analysis put forth by various experts.
 13 Q Have you seen it all packaged in one remedial
 14 investigation?
 15 A No, just the individual expert reports. 3:53PM
 16 Q Are you familiar with the phrase, "site specific
 17 baseline risk assessment"?
 18 A Yes.
 19 Q Okay. Can you tell me what that means?
 20 A What it means to me is a risk assessment that uses 3:54PM
 21 the specific information from the site to say whether
 22 or not there is an unacceptable risk or potential for
 23 unacceptable risk.
 24 Q Did you do a site specific baseline assessment in
 25 this case? 3:54PM

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1 A I did not, no. 3:54PM
 2 Q Have you seen one?
 3 A Not beyond the expert reports.
 4 Q Would it -- specifically what are you talking
 5 about? 3:54PM
 6 A I think specifically some of the experts did
 7 arrive at the conclusion that there were unacceptable
 8 risks or I know that some of the experts arrived at the
 9 conclusion that there were unacceptable risks to human
 10 health and the environment. 3:54PM
 11 Q On a site specific basis?
 12 MR. BLAKEMORE: Object to form.
 13 A On a site specific basis, yes.
 14 Q On this specific basis?
 15 A Yeah, on this site. 3:55PM
 16 Q What site are you talking about?
 17 A The Illinois River Watershed.
 18 Q The entire one million acres?
 19 A The portions, I believe, mainly limited themselves
 20 to were the surface waters, the Lake Tenkiller surface 3:55PM
 21 waters, mainly, and the ground waters.
 22 Q Okay. In your report, Section 2.3, it sets out
 23 the remedial action objectives, correct?
 24 A Yes, sir.
 25 Q Okay. And there are -- these are objectives that 3:55PM

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1 you developed? 3:56PM
 2 A Yes, sir.
 3 Q Okay. And the State's experts you consulted with
 4 developed them as well?
 5 A In consultation with them, yes. 3:56PM
 6 Q Okay. Isn't it true that none of these remedial
 7 action objectives have ever been documented before your
 8 report was issued to the defendants in this case?
 9 A I'm not sure I understand the question.
 10 Q Do you know if anybody else did what you did in 3:56PM
 11 Section 2.3 of your report before?
 12 A No, no, not that I know of, no.
 13 Q Okay. All right. And are you aware of any single
 14 comprehensive remedial investigation feasibility study
 15 report with respect to the IRW? 3:56PM
 16 A No, sir.
 17 Q Okay. Have any of these remedial action
 18 objectives that you developed with consultation of
 19 other experts in this case ever been presented to the
 20 public for comment? 3:57PM
 21 A Not that I'm aware of, but I don't know.
 22 Q Okay. There has been no public process for the
 23 development of the objectives outlined in Section 2.3?
 24 A I don't know.
 25 Q Well, were you involved in any public process? 3:57PM

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1 A No, sir. 3:57PM
 2 Q And you were the person that developed these
 3 objectives?
 4 A Yes, sir.
 5 Q Section 2.4 outlines remedial action goals? 3:57PM
 6 A Yes, sir.
 7 Q Okay. And these are goals that you developed?
 8 A These are largely derivative from the initial
 9 scope of work which identified the injuries, so they
 10 were in -- developed based on that initial scope of 3:57PM
 11 work and refined based on the ongoing experts.
 12 Q Can you tell me who developed these remediation
 13 goals?
 14 A Again, the different remedial goals are related to
 15 different injuries, and I don't know if I can source 3:58PM
 16 directly what the goals are.
 17 Q Where did you get these goals to put in your
 18 report?
 19 A Well, again, they're based on the injuries, so I
 20 wrote -- I tried to make sure that there was a role for 3:58PM
 21 each identified injury.
 22 Q Okay. So you wrote these goals?
 23 A In consultation with the experts, yeah.
 24 Q Which experts?
 25 A Dr. Cooke, Dr. Welch, Dr. Stevenson, Dr. Engel. 3:58PM

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1 Q Okay. Is that it? 3:59PM
 2 A I think that's for the most part -- Dr. Fisher.
 3 Q Dr. Fisher as well. Isn't it true that none of
 4 these remediation goals have ever been documented
 5 before by the State of Oklahoma in an official state 3:59PM
 6 document?
 7 A I don't know what you mean by documented.
 8 Q Written down, published.
 9 A Not that I know of, but I -- certainly there are
 10 elements of these goals that I think are common to 3:59PM
 11 various regulations.
 12 Q Okay. Are you aware of any single remedial
 13 investigation feasibility study document that outlines
 14 these remediation goals?
 15 A No, sir. 3:59PM
 16 Q Isn't it true that none of these remediation goals
 17 have ever been presented to the public for comment?
 18 MR. BLAKEMORE: Asked and answered.
 19 Q I asked with respect to remedial action.
 20 A Can you ask it without the double negative? 4:00PM
 21 Q Okay. Are you aware if any of the remediation
 22 goals in Section 2.4 of your report have been presented
 23 to the company public for comment?
 24 A No, I'm not aware.
 25 Q Are you aware of any public process -- 4:00PM

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1 A No, sir. Well -- 4:00PM
 2 Q How about I finish my question?
 3 A Sorry.
 4 Q Okay. Are you aware of any public process for the
 5 development of these remediation goals? 4:00PM
 6 A No, sir.
 7 Q And then later on in your report you -- you
 8 discuss in Section 3 the evaluation of the remedial
 9 technologies. Isn't it true that your report is the
 10 first time the State of Oklahoma has ever done this 4:01PM
 11 type of evaluation of remedial technologies?
 12 MR. BLAKEMORE: Object to form.
 13 A To the best of my knowledge.
 14 Q That's correct?
 15 A Again, there are elements of these technologies 4:01PM
 16 that I'm sure the State has looked at and -- under
 17 different circumstances, but the first time they've all
 18 come together, I don't know.
 19 Q Okay. Isn't it true that this is the first time
 20 the remedial technologies have been evaluated in a 4:01PM
 21 published document?
 22 MR. BLAKEMORE: Object to form.
 23 A It's the first time that I'm aware of.
 24 Q Well, did the State of Oklahoma provide you --
 25 A No, sir. 4:02PM

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1 Q -- with this information? 4:02PM
 2 A No, sir.
 3 MR. BOND: Okay. Let's take a break.
 4 THE VIDEOGRAPHER: We are now off the
 5 record. The time is now 4:02 p.m. 4:02PM
 6 (Following a short recess, proceedings
 7 continued on the record.)
 8 THE VIDEOGRAPHER: We are back on the
 9 record. The time is now 4:07 p.m.
 10 Q Okay. Before our break, we were talking about 4:06PM
 11 some of the evaluations of the alternatives proposed in
 12 here, in your report. The alternatives set forth in
 13 Section 3 of your report have not been presented to the
 14 public for notice and comment, correct?
 15 A I don't know that. 4:06PM
 16 Q You don't know whether or not they have?
 17 A No, sir.
 18 Q Okay. Okay. There has been no opportunity for
 19 public input at all with respect to the creation of
 20 your alternatives? 4:07PM
 21 A I don't know. Again, the alternatives -- I don't
 22 know.
 23 Q You don't know?
 24 A I don't know.
 25 Q Have you considered any comments by any member of 4:07PM

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1 the public with respect to your development or 4:07PM
 2 evaluation of remedial options or alternatives in the
 3 Illinois watershed?
 4 A No, not that I recall.
 5 Q Have you considered any comments with respect to 4:07PM
 6 your evaluation or development of remedial alternatives
 7 from interested parties, such as poultry farmers,
 8 cattle farmers or poultry companies?
 9 MR. BLAKEMORE: Object to the form.
 10 A No, not that I recall. 4:08PM
 11 Q So would it be fair to say that the creation of
 12 your remedial alternatives, as well as the evaluation
 13 of those alternatives, has been a private process?
 14 A Define private process.
 15 Q Meaning the public and other interested parties 4:08PM
 16 were not allowed to participate.
 17 A I don't know about not being allowed to
 18 participate. But they didn't participate that I'm
 19 aware of, at least in what I did.
 20 Q Okay. No proposed plan with respect to your 4:09PM
 21 remedial alternatives has been published to date?
 22 A No, sir, that I'm aware of.
 23 Q Have you held any public meetings in which there
 24 has been discussions of your remedial alternatives?
 25 A Me personally, no, sir. 4:09PM

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1 Q Are you aware of any? 4:09PM
 2 A Not that I know of, but I'm not aware.
 3 Q Is bacteria a hazardous substance under CERCLA?
 4 A I don't know the answer to that question.
 5 Q Is total nitrogen a hazardous substance under 4:10PM
 6 CERCLA?
 7 A I don't know the answer to that question, but I
 8 suspect not.
 9 Q Is total phosphorus a hazardous substance under
 10 CERCLA? 4:10PM
 11 MR. BLAKEMORE: Object to the form.
 12 A Again, I don't know the answer for certain, but I
 13 suspect not. CERCLA or RCRA?
 14 Q CERCLA.
 15 A Still not sure. 4:10PM
 16 MR. BLAKEMORE: Object to the form.
 17 Q On Page 7 of your report under the heading 2.4,
 18 "Development of Remediation Goals"?
 19 A Uh-huh.
 20 Q It says, "As part of the consultation with the 4:11PM
 21 State's injury experts, CDM defines specific metrics
 22 and provided measurable indices of the degree of injury
 23 for each media and receptor of concern in the IRW," do
 24 you see that?
 25 A Uh-huh. 4:11PM

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1 Q What metrics were defined? 4:11PM
 2 A The specific metrics are largely documented in the
 3 expert reports. For the purposes of this report, I was
 4 relying on the experts and their opinion as to whether
 5 or not the different remedial technologies would need 4:12PM
 6 those indices, I didn't try and define those metrics
 7 here beyond what I put in the report.
 8 Q Okay. Do you know the metric?
 9 A No. There's a variety of different metrics.
 10 Q Can you list any of them? 4:12PM
 11 A Total phosphorus and surface water concentration
 12 is one, chlorophyll A, dissolved oxygen, different
 13 counts of indicator bacteria and specific species of
 14 bacteria. But, again, I was relying on the experts and
 15 their assessment of how these remedial alternatives 4:12PM
 16 would affect those outcomes.
 17 Q Okay. So as far as the success of any of the
 18 remedial alternatives proposed in your report --
 19 A Yep.
 20 Q -- are you offering an opinion as to whether or 4:13PM
 21 not they'll be successful or not?
 22 A Not directly, no.
 23 Q Who is directly offering that opinion?
 24 A I think that's largely contained within the expert
 25 reports as to -- well, go ahead. 4:13PM

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1 Q But the success of the alternatives you have 4:13PM
 2 proposed --
 3 A Uh-huh.
 4 Q -- is not something that you're offering an
 5 opinion? The potential success of the alternatively 4:13PM
 6 proposed? Isn't that something you're offering an
 7 opinion about?
 8 A I'm relying primarily on the experts to determine,
 9 you know, at what point in time the remedial goals are
 10 achieved, so I'd like to answer it that way. 4:13PM
 11 Q Okay. So if I wanted to talk about potential
 12 success of a particularly medial measure, let's say,
 13 with respect to Lake Tenkiller, who would you -- which
 14 experts would you propose I would talk to?
 15 A Dr. Cooke, Dr. Welch, Dr. Wells. 4:14PM
 16 Q Okay. All right. Let's go to Section 4.4.1,
 17 "Treatment, Drinking Water Surface Water Treatment."
 18 It's Page 29.
 19 A Thanks.
 20 Q Are you there? 4:15PM
 21 A Yep.
 22 Q Okay. Have you ever taken any courses on drinking
 23 water treatment processes?
 24 A Yes.
 25 Q Okay. Can you describe those courses for me? 4:15PM

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1 A Part of my graduate study at University of 4:15PM
 2 Michigan I took a water treatment course.
 3 Q Okay. Single semester course?
 4 A I think so.
 5 Q Okay. Have you taken any specific courses on 4:15PM
 6 disinfection byproduct formation?
 7 A Not specifically, no.
 8 Q Okay. Have you ever been hired to select remedial
 9 alternatives for disinfectant byproduct treatment?
 10 A Me personally or my firm? 4:16PM
 11 Q You.
 12 A No.
 13 Q Okay. Have you ever been hired to design or
 14 construct a drinking water treatment plant?
 15 A Components of a drinking water plant as a whole? 4:16PM
 16 Q Yes.
 17 A Not as a whole that I recall.
 18 Q Okay. And you have never testified as an expert
 19 witness on drinking water treatment processes?
 20 A No, sir. 4:16PM
 21 Q And you've never testified as an expert witness on
 22 the remediation of DBPs?
 23 A No, sir.
 24 Q And you've never testified as a expert witness on
 25 the formation of DBPs? 4:17PM

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1 A No, sir. 4:17PM
 2 Q Okay. Have you ever published an article on the
 3 remediation of DBPs?
 4 A No, sir.
 5 Q Okay. Have you ever published an article on the 4:17PM
 6 formation of DBPs?
 7 A No, sir.
 8 Q Have you ever published on the topic of drinking
 9 water treatment generally?
 10 A No, sir. 4:17PM
 11 Q Have you ever published any article?
 12 A Yes.
 13 Q Okay. Are your publications listed in your CV?
 14 A Yes.
 15 Q Okay. Have you ever worked for a drinking water 4:17PM
 16 utility?
 17 A As an employee of a drinking water utility or --
 18 Q Let's start as an employee.
 19 A No.
 20 Q What about in another capacity? 4:17PM
 21 A I've done work for Detroit Water and Sewage
 22 Department. We did a bunch of work with respect to
 23 vulnerability assessments for drinking water supplies
 24 as part of the contract with the Department of
 25 Environmental Quality Water Bureau. 4:18PM

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<p>1 Q Okay. You said we? 4:18PM</p> <p>2 A CDM.</p> <p>3 Q Did you actually do it?</p> <p>4 A Yeah, I was the client officer for those projects.</p> <p>5 Q What work did you do? 4:18PM</p> <p>6 A For the security project of developed training</p> <p>7 materials presentation.</p> <p>8 Q On what?</p> <p>9 A With respect to hardening or -- well, actually</p> <p>10 compliance with the vulnerability assessments that were 4:18PM</p> <p>11 required under the -- for drinking water supplies.</p> <p>12 Q Okay. Vulnerability as to what?</p> <p>13 A Security issues.</p> <p>14 Q Okay. Are you certified in any state as a</p> <p>15 drinking water utility operator? 4:19PM</p> <p>16 A No, sir.</p> <p>17 Q I assume you've been inside a drinking water</p> <p>18 treatment plant?</p> <p>19 A Yes, sir.</p> <p>20 Q Okay. Have you been inside any drinking water 4:19PM</p> <p>21 treatment plant in the IRW?</p> <p>22 A No, sir.</p> <p>23 Q Okay. Have you been to any of the drinking water</p> <p>24 treatment plants in the IRW?</p> <p>25 A I've driven by one, yeah. 4:19PM</p>	<p>1 complied with the applicable MCLs? 4:21PM</p> <p>2 A In -- anywhere or --</p> <p>3 Q Yeah.</p> <p>4 A Yeah.</p> <p>5 Q Okay. Which ones? 4:21PM</p> <p>6 A Certainly Bays City would put granule --</p> <p>7 THE REPORTER: I'm sorry.</p> <p>8 A I'm sorry. Bays City puts granular-activated</p> <p>9 carbon. Lake Tanawanda, New York, I think, did the</p> <p>10 same, but there are facilities that have had to 4:21PM</p> <p>11 remediate. I'm sorry, did I miss the question?</p> <p>12 Q I said do you know of any water treatment plants</p> <p>13 that required remediation even though they complied</p> <p>14 with the applicable MCLs?</p> <p>15 A Oh, I'm sorry. I misunderstood the question. 4:21PM</p> <p>16 Q Did you provide remedial cost estimates for any</p> <p>17 other utilities that did not violate the DVP MCL in</p> <p>18 your report?</p> <p>19 A Potentially. I'm not sure.</p> <p>20 Q Why are you not sure? 4:22PM</p> <p>21 A Because, again, I was looking at the potential and</p> <p>22 based on remedial alternatives, if cessation was not</p> <p>23 implemented then it's likely that the conditions would</p> <p>24 continue to worsen. And even if they had not -- and if</p> <p>25 they weren't currently violating the disinfection 4:22PM</p>
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<p>1 Q You've actually been on the property and looked 4:19PM</p> <p>2 around?</p> <p>3 A No.</p> <p>4 Q So you haven't visited all the plants to which you</p> <p>5 are rendering kind of an opinion as to remedial cost 4:19PM</p> <p>6 estimates?</p> <p>7 A No, I did not.</p> <p>8 Q Okay. I want to make sure I've got this right.</p> <p>9 Did you calculate the cost to remediate Tahlequah</p> <p>10 Public Water Authority at \$82 million? 4:20PM</p> <p>11 A Yes, based on the EPA cost index.</p> <p>12 Q Okay. Why did you include Tahlequah in your</p> <p>13 report?</p> <p>14 A Based on the surface water intake of being on the</p> <p>15 Illinois River. 4:20PM</p> <p>16 Q That's the sole reason?</p> <p>17 A Yes.</p> <p>18 Q Do you know how many violations of DBP/MCL -- MCLs</p> <p>19 there have been at Tahlequah PWA in the last year?</p> <p>20 A No, I don't. 4:20PM</p> <p>21 Q If I told you that it was zero, do you have any</p> <p>22 reason to disagree with me?</p> <p>23 A No.</p> <p>24 Q Okay. Do you know of any drinking water treatment</p> <p>25 plant that has required remediation, even though it has 4:21PM</p>	<p>1 byproduct rule, there was a potential that they could. 4:22PM</p> <p>2 Q Did you even research the number of MCL violations</p> <p>3 at each utility before you determined they required</p> <p>4 remediation?</p> <p>5 A Not as part of my work, no. 4:22PM</p> <p>6 Q Okay. So you recommend remediation to 18-plus</p> <p>7 water treatment plants without actually looking at the</p> <p>8 number of MCL violations?</p> <p>9 A I was provided the list based on work done by</p> <p>10 other experts, but I did not do an evaluation 4:23PM</p> <p>11 independent of that.</p> <p>12 Q So with respect to these drinking water treatment</p> <p>13 plants, is it fair to say that all you did was just add</p> <p>14 up the numbers --</p> <p>15 A Yes. 4:23PM</p> <p>16 Q -- to remediate them?</p> <p>17 A Yeah, I mean, as far as the list was provided, the</p> <p>18 cost estimate was based on EPA cost index.</p> <p>19 Q So you didn't make the determination that a</p> <p>20 particular wastewater treatment plant needed 4:23PM</p> <p>21 remediation?</p> <p>22 A Water treatment plant?</p> <p>23 Q Right.</p> <p>24 A No.</p> <p>25 Q Who made that determination? 4:23PM</p>

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1 A I can't recall exactly where I got the list from, 4:23PM
 2 but Dr. Teaf, I imagine.
 3 Q Okay. Let's look at Page 29. As far as a
 4 treatment option, you listed enhanced coagulation
 5 softening and granular-activated carbon as possible 4:24PM
 6 treatment technology, correct?
 7 A Yes.
 8 Q Is the granular-activated carbon that you listed
 9 here JAC-10 or JAC-20?
 10 A I didn't specify. 4:24PM
 11 Q Do you know the difference between the two?
 12 A Not off the top of my head, no.
 13 Q Did you come up with this technology of using
 14 granular-activated carbon or did somebody else tell you
 15 to put it on there? 4:24PM
 16 A I believe I based it on the front matter for the
 17 disinfection byproduct rule as part of the federal
 18 register.
 19 Q Okay. For each of the plants, did you consider
 20 altering the chlorine dose as a form of remediation? 4:25PM
 21 A No, I didn't look into changing the disinfection
 22 method.
 23 Q Okay. That could be an alternative, couldn't it?
 24 A Yes. I mean, the -- all these plants could be
 25 looked at with greater specificity and develop plant 4:25PM

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1 specific approaches but, again, based on the time 4:25PM
 2 available, that's the approach I took.
 3 Q So you took kind of a broad approach that would
 4 just generalize treatment options for the 18-plus
 5 treatment plants? 4:26PM
 6 A Yes.
 7 Q Okay. So you haven't specifically analyzed any
 8 particular processes or treatments used at any one of
 9 the plants?
 10 A No. 4:26PM
 11 Q Okay.
 12 A No.
 13 Q Did you get all of your ideas with respect to
 14 treatment technologies listed in Section 4.41 of your
 15 report from the document you referenced earlier? 4:26PM
 16 A Again, I did have -- talked the project through
 17 with Jana Skadsen --
 18 THE REPORTER: I'm sorry.
 19 A I talked the project through with Jana Skadsen of
 20 our HR office. 4:26PM
 21 Q Can you spell her last name?
 22 A S-K-A-D-S-E-N.
 23 Q How many times have you spoken with her?
 24 A With respect to this project or --
 25 Q Yeah. 4:27PM

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1 A Oh, I don't know, make half a dozen at the most. 4:27PM
 2 Q Okay. Did she author any part of your report?
 3 A No, I don't think so.
 4 Q Okay. Did she review your report?
 5 A No. 4:27PM
 6 Q Okay. Did she provide you with any data for your
 7 report?
 8 A Yeah, the federal register citation.
 9 Q Okay. Did you ever review those sections of the
 10 federal register before issuing this report? 4:27PM
 11 A Did I review them before issuing the report, yes.
 12 Q No. I mean, prior to working on your report, had
 13 you ever reviewed those sections of the federal
 14 register?
 15 A I looked at components of the disinfection 4:27PM
 16 byproduct rules, yeah. But the specific citation that
 17 I used to develop the costs, not that I recall.
 18 Q So this is the first time you've developed the
 19 costs under those rules?
 20 A Yeah, I think so. 4:28PM
 21 Q Okay. Did you have anybody check your work?
 22 A On this specific issue, no.
 23 Q I know that you didn't look at each plant
 24 specifically, but in your general approach across all
 25 of the plants, did you ever consider using chloramines 4:28PM

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1 as a disinfectant? 4:28PM
 2 A That is an alternative. Again, I was relying on
 3 the economic analysis done by the EPA and using
 4 their -- again, I wasn't going into any detail with
 5 respect to the actual operation of the plant. I wasn't 4:28PM
 6 able to make those types of determinations --
 7 Q Okay.
 8 A -- of all the treatment technologies, I was just
 9 using the overall index.
 10 Q Okay. I'm going to give you a list of things and 4:29PM
 11 just tell me whether or not you considered these as an
 12 alternative, okay?
 13 A Uh-huh.
 14 Q Did you consider chloride -- chloride dioxide --
 15 chlorine dioxide? 4:29PM
 16 A Not outside of its consideration within the EPA
 17 document.
 18 Q Okay. Did you consider UV treatment?
 19 A Again, not outside the -- where that appears in
 20 the EPA analysis. 4:29PM
 21 Q Does it appear in there?
 22 A I believe so, yes, but I can't recall.
 23 Q Okay. So did you evaluate that as an alternative?
 24 A Not outside of how it was rolled up by the EPA in
 25 the analysis. 4:29PM

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<p>1 Q Did you put a cost estimate in there for UV treatment? 4:29PM</p> <p>2 A No.</p> <p>3 Q Okay. Did you consider ozone treatment?</p> <p>4 A Again, same answer. Not outside how it was analyzed as part of the EPA document. 4:29PM</p> <p>5 Q Did you prepare a cost estimate for ozone treatment?</p> <p>6 A No.</p> <p>7 Q Okay. Did you consider reverse osmosis? 4:30PM</p> <p>8 A Again, not outside the EPA document.</p> <p>9 Q Did you prepare a cost estimate with respect to reverse osmosis?</p> <p>10 A No.</p> <p>11 Q Did you consider micro filtration or ultrafiltration? 4:30PM</p> <p>12 A Not outside the EPA document framework.</p> <p>13 Q Did you prepare a cost estimate with respect to micro filtration or ultrafiltration?</p> <p>14 A Not outside of EPA document. 4:30PM</p> <p>15 Q Did you consider nano filtration?</p> <p>16 A Again, not outside of the EPA document.</p> <p>17 Q Just so we're clear, you did not perform a separate cost calculation for the individual treatment technologies that we've discussed? 4:30PM</p>	<p>1 A Or, actually I might have taken the number of users and then just plugged in the number. 4:33PM</p> <p>2 THE REPORTER: I'm sorry.</p> <p>3 Q Okay.</p> <p>4 A Looked at the number of users for a particular plant and read the associated costs as part of the area capital output volume. 4:33PM</p> <p>5 Q Okay. And you were provided with a number of users of each of those plants?</p> <p>6 A Yes, sir. 4:33PM</p> <p>7 Q Where did you get that information?</p> <p>8 A Boy, I don't recall. That should be in the e-mail records, though.</p> <p>9 Q Do you think it came from CDM or do you think it came from another expert? 4:33PM</p> <p>10 A I can't recall.</p> <p>11 Q Okay. Okay. Let's go to Table 2 of your report, which is Page 3 of 12 of the tables. This is a preliminary cost estimate for vegetative buffer strips -- 4:34PM</p> <p>12 A Uh-huh.</p> <p>13 Q -- along all streams in the Illinois watershed?</p> <p>14 A Uh-huh.</p> <p>15 Q And it appears that the land acquisition unit cost that you put in here is \$1,465 -- 4:34PM</p>
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<p>1 A Correct. 4:30PM</p> <p>2 Q Okay. The EPA document that you're referring to is a Federal Register, Volume 71, No. 2, January 4, 2006. It's referenced on Page 30 of your report.</p> <p>3 A Yep. 4:31PM</p> <p>4 Q Okay. Who told you to use that section?</p> <p>5 A Jana Skadsen found that for me.</p> <p>6 Q What's Jana's background?</p> <p>7 A She's a water treatment plant operator, retired from the City of Ann Arbor and currently works for us. 4:31PM</p> <p>8 Q Do you know there's not a lot of other cost estimates associated with that rule, are you not -- it's a bad question. Are you aware of other cost estimates contained in this rule?</p> <p>9 A I'm aware that the rule summarizes the more detailed analysis done by EPA. 4:32PM</p> <p>10 Q Okay. More detailed analysis of other costs?</p> <p>11 A Yeah, that they summarized in the federal register.</p> <p>12 Q Okay. Did you have to perform any calculations with respect to the information contained in the Federal Register, Volume 71, Number 2? 4:32PM</p> <p>13 A I believe I read directly off the table and multiplied it by the number of users.</p> <p>14 Q Okay. 4:33PM</p>	<p>1 A Yes. 4:34PM</p> <p>2 Q -- per --</p> <p>3 A Acre.</p> <p>4 Q -- acre. Okay. How did you get that number?</p> <p>5 A It's referenced there from the Department of Agricultural report. 4:34PM</p> <p>6 Q What's the report say?</p> <p>7 A Basically presents the land acquisition for this specific purpose and what the typical costs are.</p> <p>8 Q It says, I know, in parentheses here it says an average of 19 states? 4:35PM</p> <p>9 A Yeah, it did it on a state-by-state basis so I just took the average.</p> <p>10 Q You didn't endeavor to go out and see how much people would expect to receive for giving up 100 feet of their riverfront property in the watershed, did you? 4:35PM</p> <p>11 A No, I did not.</p> <p>12 Q Okay. And if I understand this correctly, the 84,927 acres listed here only pertains to acreage which is pasture land or grassland that abutts a stream, creek, tributary or river in the Illinois River Watershed, correct? 4:35PM</p> <p>13 A Yes, sir.</p> <p>14 Q And it includes both Arkansas and Oklahoma?</p> <p>15 A Yes, sir. 4:35PM</p>

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1 Q Okay. What did you do to verify if there was 4:35PM
 2 already a buffer?
 3 A I did not verify if there was already a buffer.
 4 Q Why not?
 5 A I had to work with the information that was 4:36PM
 6 available.
 7 Q What information was available to you?
 8 A Land use and I think it's a 30-meter-by-30-meter
 9 pixel, but I'm not sure exactly. There wasn't any
 10 specific land use information at that high enough 4:36PM
 11 resolution to get at that question.
 12 Q Okay. You didn't take the step of actually going
 13 out and looking at the land?
 14 A Not for the number of miles that we're talking
 15 about, no. 4:37PM
 16 Q Did you look at ten feet of it?
 17 A No.
 18 Q Okay. So you didn't look at any of it?
 19 A Not me personally, no.
 20 Q Okay. Bare with me for a second. I may be 4:37PM
 21 winding down. Your recommendation that there be a
 22 cessation of poultry litter application --
 23 A Uh-huh.
 24 Q -- in the watershed assumes that that can be
 25 accomplished, right? 4:38PM

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1 A Yes. 4:38PM
 2 Q Okay. And with regard to your assumption that
 3 that can be accomplished, did you evaluate how that
 4 would be accomplished?
 5 A Only based on the one method that we present 4:38PM
 6 herein, which is disposal in a landfill.
 7 Q Who's going to take it to the landfill?
 8 A The cost for that is included.
 9 Q Well, I know the cost is included there, but, I
 10 mean, do you know whose poultry litter it is? Who does 4:38PM
 11 the poultry litter belong to?
 12 A I assume the farmer.
 13 Q Okay. So the farmer is going to take all that
 14 stuff to the landfill?
 15 A Under this scenario, yeah. 4:39PM
 16 Q That's your assumption?
 17 A Yes.
 18 Q Your assumption is that the farmer will take it to
 19 the landfill?
 20 A Yes. 4:39PM
 21 Q Okay.
 22 A Or contract to have it taken.
 23 Q Okay. So who's going to pay the \$16 million a
 24 year to take it to the landfill? I assume you think
 25 it's the farmer, right? 4:39PM

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1 MR. BLAKEMORE: Object to the form. 4:39PM
 2 A I didn't get into who picked up the tab for any of
 3 these costs.
 4 Q Okay. When you consider the financial
 5 implications of a remedial option or alternative, 4:39PM
 6 you're supposed to consider the practicality of the
 7 finances, too, aren't you?
 8 A I'm not sure how to answer that.
 9 Q Do you take into account whether or not someone
 10 can afford something -- 4:40PM
 11 A Not as part of this process.
 12 Q -- when you do a feasibility study?
 13 A Not with respect to the remedial alternatives that
 14 we're developing for this or remedial alternatives in
 15 general. It's independent of who is going to pay the 4:40PM
 16 tab, the costs are based on what it takes to achieve
 17 the goal.
 18 Q Right. But then when you move them, as you do
 19 through your report, from something that's proposed to
 20 something that's discarded or something that's 4:40PM
 21 retained, do you consider any practical ramifications
 22 associated with the finances that relate to one of your
 23 remedial options?
 24 A Only when one of the remedial options has a cost
 25 that's much greater than a similar remedial option that 4:40PM

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1 achieves the same goal, then I would screen out the 4:41PM
 2 higher cost.
 3 Q Okay. Okay. Your remedial alternative of the
 4 cessation of the poultry litter assumes that poultry
 5 litter cannot be applied in the Illinois River in a 4:41PM
 6 manner which does not harm the environment?
 7 A Based on the -- my understanding of the current
 8 conditions and the past practices, that much of the
 9 fields that are readily available for the application
 10 of litter have been over applied with respect to 4:41PM
 11 phosphorus and it would be an administrative -- an
 12 enforcement challenge to condition to apply poultry
 13 waste in a manner that doesn't exacerbate the existing
 14 condition.
 15 Q Did you come up with all that on your own or did 4:42PM
 16 somebody tell you that?
 17 A I came up with that on my own.
 18 Q Yeah. So you evaluated the regulatory and
 19 logistical aspects of poultry litter application in the
 20 watershed? 4:42PM
 21 A Well, I mean, based on the work that I've done on
 22 this project and similar projects. I, in general,
 23 understand the issues that it's tough to regulate and
 24 it's tough to enforce issues that -- that people don't
 25 necessarily agree with. 4:42PM

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1 Q Okay. So you're just making an assumption based 4:42PM
 2 on how people react to regulation, that they don't like
 3 it?
 4 A I'm saying it's difficult to get -- it's difficult
 5 to come up with a workable framework for these type of 4:43PM
 6 issues, yeah.
 7 Q So you just assume at that point that it's easier
 8 to just ban the use of something?
 9 A It's certainly easier to implement, but --
 10 Q Okay. You had also made some reference to poultry 4:43PM
 11 litter's historical use --
 12 A Uh-huh.
 13 Q -- in the watershed. Did you study poultry
 14 litter's historical use in the watershed?
 15 A No, I mean, I'm basing it on the reports of the 4:43PM
 16 experts.
 17 Q Okay. So someone told you that?
 18 A Yes.
 19 Q Okay. Do you think that a study of the Illinois
 20 River Watershed focused on specific areas for the 4:44PM
 21 implementation of vegetative filter strips is not
 22 warranted?
 23 A No, I wouldn't say that. I'd say that this option
 24 can be improved by additional data, absolutely.
 25 Q But you didn't endeavor go out and find the 4:44PM

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1 specific areas where you felt that option would get, 4:44PM
 2 you know, the most bang for the buck, the best benefit?
 3 MR. BLAKEMORE: Object to the form.
 4 A Based on the, you know, the numbers that Dr. Engel
 5 produced as to how, you know, the actual effectiveness 4:44PM
 6 of this method at this stage of the game, I thought it
 7 was useful to, I guess, to roll up the costs the way we
 8 rolled them up just to put data points out there so
 9 that everybody understood what the relative costs were
 10 based on these two scenarios, and based on Dr. Engel's 4:45PM
 11 work that determined what the benefit was in terms of
 12 phosphorus removal, so I'd say they're useful data
 13 points.
 14 Q Would it have been -- strike that. With respect
 15 to the wells in the Illinois River Watershed, if I 4:46PM
 16 understood your report correctly, CDM tested -- let me
 17 ask you: How many wells did CDM test?
 18 A Sixty.
 19 Q Sixty?
 20 A (Nods head up and down.) 4:46PM
 21 Q And how many wells are you recommending
 22 replacement of?
 23 A 190 to 980.
 24 Q Okay. How can you make that recommendation given
 25 the fact that you have only sampled 60 wells? 4:46PM

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1 A I think the recommendation is based on the best 4:46PM
 2 available data that I had at the time I put together
 3 the report.
 4 Q You would prefer if you were going to recommend
 5 the replacement of a well, that that well actually be 4:47PM
 6 tested, wouldn't you?
 7 A You could certainly improve upon the basis for the
 8 estimate that I provided herein, but this is the first
 9 preliminary roll up and based on a limited --
 10 admittedly limited dataset, we made some projections. 4:47PM
 11 Q So that's just a projection?
 12 A An estimate, yeah.
 13 Q Would you recommend the replacement of a well that
 14 has no contamination?
 15 A No. 4:47PM
 16 Q Do you know whether or not you are, in fact,
 17 making recommendation for the replacement of wells that
 18 have no contamination?
 19 A I don't know that, no.
 20 MR. BOND: I don't have any more 4:48PM
 21 questions. Pass the witness.
 22 A Do you know how much longer you've got?
 23 MR. McDANIEL: Probably, I don't know.
 24 I'll guess 40 minutes.
 25 A Can we take quick break? 4:48PM

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1 THE VIDEOGRAPHER: We are now on off the 4:48PM
 2 record. The time is now 4:49 p.m.
 3 (Following a short recess, proceedings
 4 continued on the record.)
 5 THE VIDEOGRAPHER: We are now back on the 5:00PM
 6 record. The time is now 5:01 p.m.
 7 DIRECT EXAMINATION
 8 BY MR. McDANIEL:
 9 Q Mr. King, my name Scott McDaniel. I represent
 10 Peterson Farms, Inc. I know you're tired and we're all 5:01PM
 11 tired, so I'll try not to use any more time than
 12 necessary to finish up. You are a registered or
 13 licensed professional engineer?
 14 A Yes, sir.
 15 Q And in what state? 5:01PM
 16 A Michigan.
 17 Q In Michigan, do engineers license by discipline?
 18 A No, they do not.
 19 Q Okay. So yours is just a general engineering
 20 license, it's not specific as to chemical or 5:01PM
 21 environmental engineering?
 22 A Correct.
 23 Q Does that mean all engineers take the same test?
 24 A I believe at the time I took it we all took the
 25 same test and then chose which disciplines to respond 5:01PM

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1 to. 5:01PM
 2 Q Okay. Which disciplines did you respond to?
 3 A Primarily chemical and environmental.
 4 Q Are you licensed as an engineer in Oklahoma?
 5 A No, sir. 5:02PM
 6 Q On Page 4 of your report, Section 2, this
 7 Paragraph says, "The state's experts have identified
 8 several injuries," do you see that, sir, second
 9 paragraph?
 10 A Yes. 5:02PM
 11 Q Okay. And then there are these headings, "Human
 12 Concerns and Health Issues, Lake Tenkiller and Rivers
 13 and Streams"?
 14 A Uh-huh.
 15 Q And then there are bullet points underneath of 5:02PM
 16 each of those headings?
 17 A Yes.
 18 Q Are these the -- the injuries that you're
 19 referring to?
 20 A Yes, sir. 5:02PM
 21 Q All right. Now, as to those specific injuries,
 22 will you be testifying, Mr. King, that as to each one
 23 of these bullet points that as a matter of fact and
 24 science, these injuries do exist in the Illinois River
 25 Watershed. Will that be your role in this case? 5:03PM

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1 A No, sir. 5:03PM
 2 Q Under the human concerns and health issues, it
 3 refers to bacterial pathogens. Are -- sir, can you
 4 identify any pathogens that have been alleged to be
 5 associated with poultry litter? 5:03PM
 6 A E. coli, salmonella.
 7 Q Okay. Is that it?
 8 A That's all that come to mind right now.
 9 Q Which strain of E. Coli?
 10 A I don't know. 5:04PM
 11 Q You would agree there are multiple strains of
 12 E. Coli?
 13 A I'm not an expert in that field.
 14 Q Okay. Now, cyanobacteria, what -- what are the
 15 causes for the growth of cyanobacteria in a water body? 5:04PM
 16 A Again, I'm not an expert, but I believe one of the
 17 contributing factors is the presence of phosphorus.
 18 Q Have you -- are you aware of any evaluation that
 19 has attributed any percentage are cyanobacteria in any
 20 of the waters in the Illinois River Watershed directly 5:04PM
 21 to the practice of land applying poultry litter?
 22 A I'm not sure if Dr. Cooke and Welch address that
 23 in their report or not.
 24 Q Can you speak to that point, sir?
 25 A No. 5:05PM

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1 Q In the course of this project you undertook, which 5:05PM
 2 is described in your report, did you undertake to
 3 identify any remedial measures to reduce health effects
 4 from pathogens or bacteria from sources other than
 5 those that are alleged to derive from poultry litter? 5:05PM
 6 A Not that -- no, I don't think so.
 7 Q Did you undertake to identify any remedial
 8 measures to address cyanobacteria, other than
 9 cyanobacteria that's alleged to be caused by the land
 10 application of poultry litter? 5:05PM
 11 A No, sir.
 12 Q As it relates to each of these alleged injuries
 13 that are listed, the bullet points on Page 4 and Page 5
 14 of your report, can you specifically attribute what, if
 15 any, of these specific injuries are caused directly by 5:06PM
 16 the practice of land applying poultry litter in the
 17 Illinois River Watershed?
 18 A I believe Dr. Engel -- Dr. Engel's work --
 19 Q Pardon me, sir. Can you answer that question?
 20 A Not without referring to Dr. Engel's work, no. 5:06PM
 21 Q Look at Page 6 of your report. These -- the three
 22 constituents of concern, can I use that term, or
 23 contaminants of concern, phosphorus, bacteria and
 24 nitrogen?
 25 A Yes, sir. 5:07PM

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1 Q If I call them constituents of concern, is that 5:07PM
 2 acceptable to your terminology?
 3 A Sure.
 4 Q And I understand that based upon the information
 5 you were provided, these are the constituents that are 5:07PM
 6 the sources of the injuries to be addressed to your
 7 remediation study?
 8 A Yes, sir.
 9 Q And I think we've talked considerably about
 10 phosphorus. Bacteria, if I understand your testimony 5:07PM
 11 through today, the injury associated with bacteria that
 12 you seek to address in your report is the risk of
 13 ingestion of bacteria in domestic drinking water wells
 14 in the Illinois River Watershed, is that right?
 15 A Yes, sir. 5:08PM
 16 Q All right. What is the injury associated with
 17 nitrogen or nitrates?
 18 A Again, I'm not an expert but, basically, the MCL
 19 for nitrate is 10 milligrams per liter. And it's -- I
 20 believe it's been linked to impacts with infants, 5:08PM
 21 health risks.
 22 Q All right. Just so I'm clear, your position is
 23 that the injury that needs to be addressed in the
 24 Illinois River Watershed that derives in nitrogen or
 25 nitrogen compounds comes from the ingestion of water 5:08PM

54 (Pages 210 to 213)

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1 containing nitrates? 5:09PM
 2 A Yes, sir.
 3 Q Now, as to your three constituents of concern;
 4 phosphorus, bacteria and nitrogen, total nitrogen; have
 5 you traced the injury back to any source site for any 5:09PM
 6 one of these constituents of concern?
 7 A Me personally, no.
 8 Q Now, you mentioned that you -- other experts
 9 defined for you what the injuries were and that defined
 10 the scope your project going forward, right? 5:09PM
 11 A Yes, sir.
 12 Q Now, for the total nitrogen, who -- who told you
 13 that there was an injury in the Illinois River
 14 Watershed associated with total nitrogen and you needed
 15 to address that? 5:10PM
 16 A Actually, specifically for total nitrogen and
 17 bacteria for the drinking water well, that was actually
 18 based on my own analysis of the 60 wells.
 19 Q Okay. All right. Because I have read all the
 20 other expert reports and I want you to correct me if my 5:10PM
 21 statement is wrong. I have not seen any of the other
 22 causation expert reports submitted by the plaintiff in
 23 this matter where an expert offered the opinion that
 24 there was a problem with total nitrogen in the Illinois
 25 River Watershed. I've only seen that in your report, 5:10PM

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1 is that correct? 5:10PM
 2 MR. BLAKEMORE: Object to form.
 3 A I can't speak to all the other reports.
 4 Q Are you aware of any other expert that has offered
 5 an opinion in this case that there was a problem with 5:10PM
 6 total nitrogen in the ground water of the Illinois
 7 River Watershed other than yourself?
 8 A No, I'm not aware.
 9 Q Your opinion is -- is the foundation for that
 10 opinion, does it -- does that foundation include 5:11PM
 11 anything other than the analytical results from the
 12 60 groundwater wells sampled by Camp, Dresser and
 13 McKee?
 14 A No, sir.
 15 Q Now, the remedial alternatives and in response to 5:11PM
 16 the questions posed by Mr. Bond, you stated what would
 17 be the alternatives you would recommend that the court
 18 implement?
 19 A Uh-huh.
 20 Q If those alternatives are implemented, will it 5:11PM
 21 solve the, quote, the alleged problems in the Illinois
 22 River Watershed with phosphorus, bacteria and total
 23 nitrogen?
 24 A Based on my analysis of the report and the
 25 information provided, the recommended alternatives will 5:11PM

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1 eventually result in the solution of -- of the problem, 5:12PM
 2 I guess, the question is over what time scale. I rely
 3 on the experts for that.
 4 Q And what is -- what's your basis for that opinion?
 5 Is that your own analysis or is that the analysis of 5:12PM
 6 others?
 7 A Well, based on my own analysis of the individual
 8 remedial objectives and what they would do with respect
 9 to addressing the injuries. That's the basis.
 10 Q At the end point -- well, what would be the 5:12PM
 11 eutrophic of state of Lake Tenkiller?
 12 A I would rely on Dr. Cooke and Dr. Welch's analysis
 13 of when Lake Tenkiller will become more, I guess --
 14 well, attain the atrophic state that it would have
 15 attained had poultry waste not been land applied. 5:13PM
 16 Q What would that state be?
 17 A I believe predominantly oligotrophic, mesotrophic,
 18 in that range.
 19 Q Is that your own scientific opinion or are you
 20 relaying to me the opinion of someone else? 5:13PM
 21 A I am relying on Dr. Cooke and Welch.
 22 Q Explain to me, Mr. King, why you made no attempt
 23 to offer alternatives to mitigate phosphorus entering
 24 the system from sewage and treatment plants?
 25 A Well, based on the state of wastewater treatment 5:13PM

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1 plants in general and the efforts that they've made 5:13PM
 2 over the past -- a few decades in terms of removing
 3 phosphorus, they have definitely improved their
 4 nutrient removal effectiveness greatly over what it was
 5 several years ago, so that additional removal or the 5:14PM
 6 source contribution for wastewater treatment plants, I
 7 believe by Dr. Engel's estimate, that that's going to
 8 be pretty expensive to -- and remove much fewer pounds
 9 per dollar spent.
 10 Q Going to be less than a billion dollars? 5:14PM
 11 A I don't think it's going to be less than a billion
 12 dollars, but again, as a percent of overall
 13 contribution, it's not going to address the overall
 14 phosphorus issues.
 15 Q But isn't it prudent to try to address all the 5:14PM
 16 sources?
 17 A I guess that's kind of beyond the scope of what I
 18 was tasked with.
 19 Q All right. Who made the decision not to propose
 20 mitigation alternatives for sewage treatment plants? 5:15PM
 21 Was that your decision or not?
 22 A It was never in the original scope.
 23 THE REPORTER: I'm sorry.
 24 A It was never in the original scope.
 25 Q All right. How about commercial fertilizer, who 5:15PM

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1 made the decision that commercial fertilizer would not 5:15PM
 2 be within the scope of these remedial alternatives?
 3 A I don't know who would have -- or who made the
 4 decision that it was not in, but from a practical
 5 perspective, my opinion would be that people aren't 5:15PM
 6 going to pay for fertilizer that they don't need,
 7 therefore, if a field is -- has sufficient phosphorus
 8 to meet agronomic needs, they wouldn't be applying
 9 phosphorus fertilizer.
 10 Q That's a decision you would make as an engineer? 5:15PM
 11 A Yes.
 12 Q Okay. Do you know what decisions farmers make,
 13 when faced with the cost of commercial fertilizers,
 14 what they buy?
 15 A No, I do not. 5:16PM
 16 Q Again, who made the decision that phosphorus
 17 contributions from commercial fertilizer wouldn't be
 18 within the scope of your work?
 19 A I don't think anybody made that decision. It was
 20 part of Dr. Engel's source contribution analysis. 5:16PM
 21 Q And there was -- there's been no discussion of
 22 remedial alternatives to address aging or failing
 23 septic systems?
 24 MR. BLAKEMORE: Object to the form.
 25 A Again, based on Dr. Engel's work, I don't think 5:16PM

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1 that's a substantial contributor of phosphorus to this 5:16PM
 2 system.
 3 Q All right. Have you undertaken your own analysis
 4 to determine the extent to which septic stems in the
 5 Illinois River Watershed are an insignificant source? 5:16PM
 6 A No.
 7 Q How large a source do you have to be before you
 8 are significant enough to warrant consideration in your
 9 remedial alternative study?
 10 A I don't know if I can quantify that. 5:17PM
 11 Q Somebody had to make a value judgment. Who made
 12 it?
 13 A I guess I don't know what the value, the -- the
 14 opportunity to remediate other alternatives, I guess,
 15 would kind of fall under that category of requires 5:17PM
 16 additional information but, again, the predominant
 17 sources were determined to be poultry waste.
 18 Q All right. My question was: Who made the
 19 valuation judgment that in this project we're not going
 20 to evaluate certain sources because they're 5:18PM
 21 insignificant?
 22 A I don't know if we ever evaluated all the
 23 alternatives that aren't attributed to poultry waste.
 24 Q I'm sorry, sir, I lost my train of concentration.
 25 A Yeah. I don't think any of these alternatives are 5:18PM

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1 related to anything other than poultry waste. 5:18PM
 2 Q All right. How does -- you discussed stream bank
 3 stabilization in your report. How does that relate to
 4 the production of poultry?
 5 A Well, for those areas that the poultry waste has 5:18PM
 6 enriched the soil materials along the bank, that would
 7 be the connection.
 8 Q But poultry companies aren't causing stream bank
 9 erosion, are they?
 10 A No, sir. 5:19PM
 11 Q All right. Now, to what extent was there any
 12 effort made to quantify the extent to which stream bank
 13 erosion is impairing water in the Illinois River
 14 Watershed?
 15 A I was relying on Dr. Engel for that. 5:19PM
 16 Q So Dr. Engel concludes that stream bank erosion is
 17 insignificant or unimportant in the over all equation?
 18 A Especially active to other sources of phosphorus,
 19 yeah.
 20 Q But you haven't personally looked at his 5:19PM
 21 calculations or determinations to see if you agree with
 22 the methodology employed to reach that conclusion?
 23 A I'm familiar with the methodology that he
 24 implemented and I'm comfortable with the conclusions
 25 that he arrived at but I haven't checked his work, so 5:20PM

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1 to speak. 5:20PM
 2 Q What's the background phosphorus -- excuse me.
 3 What would be a reasonable range of soil phosphorus
 4 concentration in the riparian soil in the Illinois
 5 River Watershed? 5:20PM
 6 MR. BLAKEMORE: Object to form.
 7 A What would be reasonable?
 8 Q What would be the expected range of phosphorus
 9 concentrations for the riparian soils in the Illinois
 10 River Watershed? 5:20PM
 11 MR. BLAKEMORE: Object to the form.
 12 MR. PAGE: Object to the form.
 13 MR. ELROD: A little sharp, a little flat.
 14 MR. PAGE: But we still harmonized.
 15 MR. BOND: I object to the harmonization. 5:20PM
 16 A I believe the soil test for phosphorus numbers are
 17 anywhere from the low -- or below the economic
 18 requirement of 65 milligrams per kilogram to into the
 19 thousands of milligrams per kilogram.
 20 Q Have you seen any data, sir, for soil samples 5:21PM
 21 taken of riparian soil in the Illinois River Watershed?
 22 A Define riparian.
 23 Q Along the banks of the creeks and streams.
 24 A I don't recall specifically banks samples.
 25 Q Do you know how many tons of soil were lost last 5:21PM

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1 year to stream bank erosion in the Illinois River 5:21PM
 2 Watershed?
 3 A No, I do not.
 4 Q If you don't know the phosphorus concentration and
 5 you don't know how much soil was lost, how can you draw 5:21PM
 6 a conclusion that it must be insignificant?
 7 A Again, I was relying on Dr. Engel.
 8 Q Okay. So you can't personally draw that
 9 conclusion?
 10 A Right. 5:21PM
 11 Q Okay. Now, let's talk about water wells, Page 6
 12 and 7 of your report. You say there's 878 wells
 13 impacted for bacteria?
 14 A What page are you on?
 15 Q Two. I'm looking at the top of Page 7. It's 5:22PM
 16 Paragraph 2.3.2. "CDM estimated 678 drinking water
 17 wells are potentially impacted --
 18 A Yes, sir.
 19 Q -- in the Oklahoma portion of the IRW? Now, if I
 20 understand this, and I don't want to belabor the point. 5:22PM
 21 You've already discussed with the counsel before me.
 22 What I gather this is, is just a simple ratio. There
 23 were 36 detections of bacteria in 60 wells, equals
 24 60 percent. And then that 60 percent was applied to
 25 the total number of 1,463 wells equals 678. Did I get 5:23PM

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1 that right? 5:23PM
 2 A Yes, sir.
 3 Q Okay. Now, the detect meant that there was at
 4 least a detection of some level of total coliform,
 5 correct? 5:23PM
 6 A Yes, sir.
 7 Q Is there a health-based criteria for total
 8 coliform in drinking water?
 9 A Yes.
 10 Q What is it? 5:23PM
 11 A I can't recall the exact frequency, but it's
 12 basically -- I can't remember the exact number but it's
 13 around one detection per 100 milliliters. It's
 14 unacceptable given a certain frequency.
 15 Q Total coliform is different from fecal coliform? 5:23PM
 16 A Yes.
 17 Q A fecal coliform means the bacteria comes from the
 18 intestines of a warm blooded animal?
 19 MR. BLAKEMORE: Object to the form.
 20 A Again, I'm not an expert on this but my basic 5:24PM
 21 understanding of the two test methods in how they're
 22 quantified, basically they're culturing indicator for
 23 bacteria on a petri dish and the big difference is what
 24 types of substrate you grow the bacteria on what type
 25 of nutrients you give them. 5:24PM

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1 Q But total coliform does not necessarily indicate 5:24PM
 2 the presence of fecal material?
 3 A Correct.
 4 Q All right.
 5 A Based on my understanding. 5:24PM
 6 Q Now, of these 1,463 wells, where did that number
 7 come from, sir?
 8 A That was estimated on the total number of well
 9 records for the counties that intersect the Illinois
 10 River Watershed, multiplied by the area of those 5:24PM
 11 counties that are within the Illinois River Watershed.
 12 Q Okay. So it's not a -- it's not a ground truthed
 13 count of wells within the watershed?
 14 A The wells were not geo located within the --
 15 Q It's an estimate of the number of wells? 5:25PM
 16 A Yes, sir.
 17 Q Now, what was the source of the information for
 18 the 1,463? Where did that come from, state records?
 19 A It's from the state database. I can't remember if
 20 I downloaded it or I had somebody else do it. 5:25PM
 21 Q So you would have -- these are wells that have
 22 been drilled and completed?
 23 A Yes.
 24 Q During what time period? Any time period?
 25 A Based on the state database, whatever is in that 5:25PM

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1 database. 5:25PM
 2 Q Okay. So the answer is yes, could be any time
 3 period?
 4 A Yes.
 5 Q Okay. Now, tell me what efforts were made, if 5:25PM
 6 any, to verify that these 1,463 wells were open and
 7 functional?
 8 A Based on the whether or not they were active in
 9 the database was the criteria.
 10 Q The State of Oklahoma checks to see if wells are 5:26PM
 11 active?
 12 A Well, I mean, if they haven't been abandoned or --
 13 Q If they haven't been plugged?
 14 A -- plugged.
 15 Q Okay. But you don't have any information to know 5:26PM
 16 whether the wells are functional or not?
 17 A No.
 18 Q How many of these 1,463 wells are actually being
 19 used today for domestic drinking water purposes?
 20 A I can't estimate that. 5:26PM
 21 Q You know, there's some wells out there that are
 22 just being used for livestock watering now because the
 23 homes are on rural water districts. That wouldn't
 24 surprise you, would it?
 25 MR. BLAKEMORE: Object to the form. 5:26PM

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1 A It wouldn't surprise me, no. 5:26PM
 2 Q So if a homeowner is now on a -- let me back up a
 3 step. The -- the centralized treatment and
 4 distribution of drinking water, domestic water within
 5 the Illinois River Watershed has been expanding its 5:27PM
 6 service through the years, would you agree?
 7 A I don't have -- I don't know that information.
 8 Q You don't know?
 9 A No.
 10 Q So if a person were to have their home placed on a 5:27PM
 11 rural water district or the city of Tahlequah were to
 12 annex an area and provide water and they still had a
 13 water well on their property, that water well would be
 14 included within your count of wells, correct?
 15 A I believe so, yes. 5:27PM
 16 Q Okay. And if that well -- that well could
 17 potentially be on your list of wells to be replaced?
 18 A Potentially.
 19 Q Within the count of wells to be replaced?
 20 A Potentially. 5:27PM
 21 Q All right. So I just want to be clear that your
 22 estimate of the number of wells that may need remedial
 23 attention are not necessarily the same wells that
 24 people are, in fact, today using for drinking water
 25 purpose, would you agree? 5:28PM

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1 A That there could be a different number than what 5:28PM
 2 I've estimated, yes.
 3 Q Sir, will you offer opinions as to whether or not
 4 any of the wells with detections of total coliform
 5 bacteria are, in fact, contaminated as a result of the 5:28PM
 6 land application of poultry litter?
 7 A That's a conclusion or assumption I made as part
 8 of this analysis.
 9 Q All right. But you will not be offering that
 10 engineering opinion as trial in this matter, will you? 5:28PM
 11 A I believe others will, but not --
 12 Q I just need to know what your opinions are.
 13 A Will I say -- will I link the -- please restate
 14 state the question. Sorry.
 15 Q Is it -- will you be offering testimony at trial, 5:29PM
 16 Mr. King, that these wells that you are suggesting
 17 needs to be replaced or otherwise treatment systems
 18 installed, that those -- that that work is the direct
 19 result of contamination caused by the land application
 20 of poultry litter? 5:29PM
 21 A That is a conclusion and assumption I have made,
 22 but --
 23 Q All right. Well, assume with me that the court
 24 will not let you testify about your assumptions, the
 25 court will let you testify potentially about things 5:29PM

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1 that you know within a reasonable degree of engineering 5:29PM
 2 certainty.
 3 A Uh-huh.
 4 Q Are you, sir, as a professional engineer prepared
 5 to render that opinion in this case? 5:29PM
 6 A Not today, no.
 7 Q Now, you would agree that bacteria levels can
 8 fluctuate in water wells, agree?
 9 A Sure.
 10 Q Levels of nitrogen and other constituents can 5:30PM
 11 fluctuate in water wells?
 12 A Yes.
 13 Q All right. Tell me the extent to which these
 14 60 wells that were sampled were sampled on more than
 15 one occasions? 5:30PM
 16 A I don't believe that there's any temporal
 17 information.
 18 Q Does that cause you any concern, sir, before you
 19 propose a multi-multimillion-dollar project to replace
 20 wells that the wells should, in fact, be sampled on 5:30PM
 21 multiple occasions to verify their condition?
 22 MR. BLAKEMORE: Object to form.
 23 A Again, based on the information that I had
 24 available, I made estimates that I deem reasonable
 25 based on the information that we have. 5:31PM

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1 Q But that's not the best information, is it? 5:31PM
 2 MR. BLAKEMORE: Object to the form.
 3 Q Those wells should be sampled multiple times,
 4 shouldn't they?
 5 MR. BLAKEMORE: Object to the form. 5:31PM
 6 A I think, yeah, I mean, a lot of this -- again, the
 7 purpose of this report is to identify the remedial
 8 alternatives that are applicable based on the
 9 information that currently exists. There's, you know,
 10 a variety of stages that these reports or feasibility 5:31PM
 11 studies would go through or these costs estimates go
 12 through that as the conceptual site model evolves and
 13 the remedial alternatives are better developed based on
 14 additional information, the information presented will
 15 be refined and additional data will be collected to 5:32PM
 16 better refine that information and make better
 17 judgments.
 18 Q All right. Mr. King, if you were retained as an
 19 engineer by a corporation -- I assume you've done work
 20 for corporations, haven't you? 5:32PM
 21 A Yes, sir.
 22 Q If you were retained by a operation and asked to
 23 evaluate a remedial action study that suggested that
 24 your client should replace water wells to the tune of
 25 millions of dollars, and you reviewed the information 5:32PM

58 (Pages 226 to 229)

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1 and the wells had only been tested one time -- 5:32PM
 2 A Mm-hmm.
 3 Q -- would you recommend to your client that those
 4 will be tested again before it agrees to pay to replace
 5 the wells? 5:32PM
 6 MR. BLAKEMORE: Object to form.
 7 A Yeah, yes, as a --
 8 Q Okay. That's fine. Now, the 60 percent number
 9 that was used to arrive at the 878 potentially
 10 bacteria-affected wells, sir, the -- excuse me, the 60 5:33PM
 11 wells that were sampled, do you know if their locations
 12 were collected in such a way as to be representative of
 13 all 1,463 wells in the Oklahoma portion of the IRW?
 14 A I'm not familiar with what the sample design was
 15 but I'm behind selection of the 60 wells. 5:33PM
 16 Q Do you know whether the groundwater hydrogeology
 17 in the Illinois River Watershed is homogeneous
 18 throughout the Oklahoma portion of the Oklahoma
 19 watershed?
 20 A I don't know too many areas in the world that are 5:33PM
 21 homogeneous over that wide an area.
 22 Q So using this 60 percent ratio was not necessarily
 23 statistically correct, but it is based upon the best
 24 information you had at your disposal?
 25 MR. BLAKEMORE: Object to form. 5:34PM

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1 A Again, I believe the estimate is as accurate as 5:34PM
 2 possible based on the available data.
 3 Q So is the answer to my question yes?
 4 A You used the word "statistically," so -- it's the
 5 best available -- I'm sorry, you'll have to restate the 5:34PM
 6 question.
 7 Q Just -- the method of just dividing 36 into 60 and
 8 extrapolating that across half a million acres, is that
 9 a robust manner in which to determine or predict the
 10 number of affected wells? 5:34PM
 11 A No.
 12 Q Okay. Nitrate levels fluctuate, I think you
 13 just --
 14 MR. PAGE: Can I interrupt for a second?
 15 I note it's 5:30 now. We've been going for over 5:34PM
 16 seven hours, and I know that --
 17 MR. McDANIEL: I don't think that's right.
 18 Did you just verify that? Go ahead, David.
 19 MR. PAGE: We started at 9:00 o'clock. Do
 20 you want me to finish my point? 5:35PM
 21 MR. McDANIEL: Go ahead.
 22 MR. PAGE: Since you already asked him to
 23 come back, my question is how much longer are we
 24 going to go tonight as opposed to just reconvening
 25 this when we have this, I think, his notes we wanted 5:35PM

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1 to inquire about? 5:35PM
 2 MR. McDANIEL: Well, the intention of
 3 reconvening was to address the supplemental
 4 production.
 5 MS. BURCH: And if he's got any e-mails 5:35PM
 6 from 2007.
 7 MR. McDANIEL: Yeah.
 8 MR. PAGE: Still there's been a seven-hour
 9 limit. How long have we been on the record? I'll
 10 verify that. 5:35PM
 11 THE VIDEOGRAPHER: We're about -- I'd
 12 probably say about 6, 45 is about where we're at.
 13 MR. McDANIEL: Okay. Are you asking or
 14 telling?
 15 MR. PAGE: I was asking to see if you're 5:36PM
 16 getting close wrapping up. I don't know what the
 17 other guys have got, but I don't plan on having this
 18 witness sit here, you know, all hours of the evening
 19 so I'd like to ask where we are.
 20 MR. McDANIEL: I understand that. It's 5:36PM
 21 5:30, is that correct?
 22 THE VIDEOGRAPHER: Yes, it is.
 23 MR. PAGE: It's almost 5:30.
 24 MR. McDANIEL: I'll say I can commit to be
 25 done by 6:00, which would be my preference, instead 5:36PM

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1 of having to break up the examination. So how about 5:36PM
 2 that, we go to 6:00?
 3 MR. PAGE: No other people have any
 4 inquiries?
 5 MR. ELROD: Not as of this moment. If 5:36PM
 6 Mr. Blakemore tells me he has a few questions on
 7 cross-examination, that will -- other than us going
 8 late, I will reserve it until after you guys finish
 9 your deposition with the other questions.
 10 MR. McDANIEL: Okay. So where are we? 5:36PM
 11 MR. BOND: Well, that's your right if we
 12 ask him to come back, but how much cross examination
 13 are you going to have?
 14 MR. BLAKEMORE: Not much.
 15 MR. McDANIEL: I'd really prefer that you 5:37PM
 16 ask him now.
 17 MR. BOND: It's just a preference.
 18 MR. ELROD: Well, we have an understanding
 19 you're not to consult with the witness about this
 20 examination. I assume counsel knows that and 5:37PM
 21 understands the rule but it would be better if it
 22 was done today.
 23 MR. McDANIEL: Well, can we agree I can go
 24 to 6:00 as step number one. And I mean, we can't
 25 require you to do anything today so that's 5:37PM

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1 ultimately up to you what you decide to do. 5:37PM
 2 MR. BLAKEMORE: I say if you go to 6:00,
 3 I'd like to wait until we're going to reconvene
 4 anyway, I'd like to wait.
 5 MR. ELROD: For your -- 5:37PM
 6 MR. BLAKEMORE: Yes.
 7 MR. ELROD: Okay.
 8 MR. PAGE: Let's go another 25 minutes
 9 then.
 10 MR. ELROD: All right. 5:37PM
 11 Q (By Mr. McDaniel) All right. If I understood your
 12 testimony earlier in the day, if poultry litter land
 13 application is terminated in the Illinois River
 14 Watershed, the alleged bacterial problem will resolve
 15 within about a year? 5:38PM
 16 A Yes, sir.
 17 Q All right. So any remediation of water wells to
 18 address bacterial issues would only be a necessary
 19 effort for this year if poultry litter is stopped,
 20 correct? 5:38PM
 21 A For those that are contaminated with bacteria,
 22 yeah.
 23 Q Okay. Is there a less expensive alternative to
 24 addressing water needs for that one year than replacing
 25 the water well? 5:38PM

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1 A Yeah, and we have an alternative for supplying 5:38PM
 2 water.
 3 Q Okay. So supplying water for one year?
 4 A Uh-huh.
 5 Q Now, nitrates, if land application of old poultry 5:39PM
 6 litter is terminated -- excuse me, not nitrates, total
 7 nitrogen, what will happen with total nitrogen? Will
 8 that problem resolve in short order as well?
 9 A I don't have any predictions on how long it will
 10 take to resolve, so -- 5:39PM
 11 Q Because you haven't definitively linked total
 12 nitrogen to poultry litter anyway, right?
 13 A No, it's an assumption that I made.
 14 Q But you don't know the extent to which if poultry
 15 already is terminated that the total nitrogen problem 5:39PM
 16 will resolve and, if so, when it will resolve? That's
 17 an unknown to you?
 18 A Yes.
 19 Q Did you compare the risk for the development of
 20 disinfection byproducts for the water treatment systems 5:40PM
 21 in the Illinois River Watershed, did you compare them
 22 to other raw water sources in eastern Oklahoma other
 23 than Lake Tenkiller and the Illinois River?
 24 A No, I didn't do a comparative analysis.
 25 Q So if I asked you if you compared them to systems 5:40PM

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1 through the balance of Oklahoma or the United States, 5:40PM
 2 the answer would be no?
 3 A No.
 4 Q Did you or anyone on your behalf communicate with
 5 any operator of any of the water treatment systems in 5:40PM
 6 the Illinois River Watershed?
 7 A I believe Dr. Teaf or somebody from the team
 8 communicated with operators.
 9 Q And the -- was the results of that communication
 10 passed along to you? 5:41PM
 11 A Not prior to putting this report together.
 12 Q Okay. So it wasn't an element in your analysis?
 13 A Not that I can think of.
 14 Q Are you aware of any of these water treatment
 15 systems in the Illinois River Watershed that have 5:41PM
 16 expressed a need for help in addressing the potential
 17 for disinfection byproduct development?
 18 A Well, I guess based on the analysis or the experts
 19 that have reviewed, you know, the disinfection
 20 byproduct rule or the potential, I guess, to exceed the 5:42PM
 21 disinfection byproduct rule, there's the anticipation
 22 that most, if not all, these facilities are going to
 23 have a problem.
 24 Q Well, I wasn't asking from your perspective, I was
 25 asking whether any of those operators have spoken up 5:42PM

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1 and said, Hey, down here at Rural Water District No. 10 5:42PM
 2 we need help, we have a problem with disinfection
 3 byproducts. Are you aware of any such --
 4 A I'm not aware of any.
 5 Q Okay. Your opinions that are expressed in your 5:42PM
 6 report that relates to the water treatment systems,
 7 have you shared these opinions with anyone at the
 8 Oklahoma Department of Environmental Quality?
 9 A I may have had discussions with folks at the
 10 Oklahoma Department of Environmental Quality, but I 5:42PM
 11 don't think with that division.
 12 Q Not --
 13 A I don't think so.
 14 Q Okay. How about with the Environmental Protection
 15 Agency? 5:42PM
 16 A EPA?
 17 Q Yeah.
 18 A No.
 19 Q All right. On Page 8 of your report, under 2.4.3,
 20 "Lake Tenkiller," I guess an objective you state here 5:43PM
 21 is to reduce phosphorus concentration in Lake Tenkiller
 22 to levels that reverse eutrophication and meet water
 23 quality standards, correct?
 24 A Uh-huh.
 25 Q Was -- yes? 5:43PM

60 (Pages 234 to 237)

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TODD KING, VOL I, 7-22-08

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1 A Yes. Sorry. 5:43PM
 2 Q That was an objective provided to you by whom?
 3 A It was part of the original scope of work.
 4 Q Well, who provided it to you?
 5 A I assume that arrived from Dr. Cooke and 5:43PM
 6 Dr. Welch's analysis.
 7 Q Tell me what does it mean where it says reverse
 8 eutrophication.
 9 A I think -- well, my interpretation of that is that
 10 for those times of the year and those areas of Lake 5:43PM
 11 Tenkiller that are, you know, become eutrophic, that
 12 the goal would be to reduce those period of time in
 13 those areas where eutrophication occurs.
 14 Q I think you said a few moments ago you don't know
 15 what the target eutrophic index number is for Lake 5:44PM
 16 Tenkiller in this project or in this lawsuit?
 17 A I rely on Dr. Cooke and Dr. Welch in items of what
 18 the goal is, but, I mean, there's a variety of indices
 19 that determine the eutrophic state and -- or the
 20 eutrophic state and I was relying on their expertise an 5:44PM
 21 interpretation of Dr. Wells' model.
 22 Q All right. Let me ask the question a little
 23 different way. If you're speaking in terms of
 24 reversing eutrophication, which suggests to me you want
 25 to take the lake back to a condition it was sometime in 5:44PM

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1 the past? 5:44PM
 2 A Okay.
 3 Q Is that a reasonable interpretation of that
 4 statement?
 5 A Yeah. 5:45PM
 6 Q All right.
 7 A Yes.
 8 Q Do you have any idea or have you been made aware
 9 of what time period -- at what time period was Lake
 10 Tenkiller at the state eutrophication we're now 5:45PM
 11 seeking -- you are now seeking?
 12 A Prior to the wide spread growing of poultry within
 13 the watershed.
 14 Q All right. That's a concept. Can you narrow it
 15 to a time period? 5:45PM
 16 A I believe it was the late '50s, '60s, somewhere in
 17 that. I'm not 100 percent sure.
 18 Q Well, we're not going to roll the number of people
 19 back, are we?
 20 A No. 5:45PM
 21 Q Or cattle?
 22 A Again, I don't know.
 23 Q Are we going to have to roll back the
 24 deforestation in order to meet that eutrophication
 25 standard of the 1950s? 5:46PM

Page 240

1 MR. BLAKEMORE: Object to the form. 5:46PM
 2 A Again, that's a goal. It is a goal that I think
 3 is, I guess, valid within the context of what we're
 4 trying to accomplish here.
 5 Q How is the eutrophic status of Lake Tenkiller 5:46PM
 6 changed over time?
 7 A My understanding is that it was primarily
 8 mesotrophic when it was first impounded and as time has
 9 gone on it, particularly during the summer months, it's
 10 become more and more eutrophic. 5:46PM
 11 Q Over the last ten years has there been a trend in
 12 the eutrophic state of Lake Tenkiller?
 13 A I can't recall a specific trend.
 14 Q All right. This 2.4.3, you state, "One of the
 15 objectives to maintain a minimum dissolved oxygen 5:47PM
 16 content of five milligrams per liter at all times."
 17 A Mm-hmm.
 18 Q Now, over how much of the lake?
 19 A For the purposes of this report, I think it's the
 20 deeper portions. Generally the LK01/LK02 area, just to 5:47PM
 21 provide a suitable habitat to allow those types of fish
 22 that need that five milligrams per liter D.O. to
 23 survive.
 24 Q Maybe my question wasn't stated very well. Are
 25 you saying that the remedial goal is to have five 5:47PM

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1 milligrams per liter dissolved oxygen over the full 5:47PM
 2 depth of the lake at all times?
 3 A I don't think the goal is aerially defined quite
 4 to include the whole lake.
 5 Q If I -- I do, I represent a defendant. How do I 5:48PM
 6 understand that standard? How do I know when it's met?
 7 A Again, I think this could be better refined but
 8 it's basically met when there's sufficient habitat
 9 throughout the year to allow the -- the different
 10 species that aren't tolerant of low D.O. conditions to 5:48PM
 11 survive through their life cycle.
 12 Q All right. My question about the full depth of
 13 the lake is an important one. Can you -- are you in a
 14 position to answer it or does that need to be answered
 15 by someone else, whether the five milligrams per liter 5:48PM
 16 is the goal for the full depth of the lake? Can you
 17 answer that question, sir?
 18 A Not any better than I just did.
 19 Q Would you explain what your technical expertise
 20 and experience is designing watershed management plans? 5:49PM
 21 A Well, I've worked on watershed wide projects, like
 22 the Rouge program.
 23 Q Well, that's not my question. I'm talking about a
 24 watershed management plan that you have authored.
 25 A Not that I've been the primary author on. 5:49PM

61 (Pages 238 to 241)

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1 Q Have you ever authored a watershed restoration 5:49PM
2 plan?
3 A Parts of the Kalamazoo River, but they're not -- I
4 guess I'm getting a little hung up on your definition
5 of watershed restoration plan. 5:49PM
6 Q Well, your Kalamazoo project dealt with a specific
7 pollutant introduced into the river?
8 A Yes.
9 Q Obviously in his case, we're dealing with a
10 million acres of land use, overland water flow, 5:49PM
11 potential infiltration ground water, all right? So
12 you've never written a plan for restoring a full
13 watershed that includes all of those elements?
14 A No.
15 Q On Page 11 of your report there is a brief 5:50PM
16 discussion about consideration of excavation of soils?
17 A Uh-huh.
18 Q Is that a yes?
19 A Yes.
20 Q Have you or anyone else working for the State of 5:50PM
21 Oklahoma, to your knowledge, identified any specific
22 area that should be excavated?
23 A No. I think that's additional data that's
24 required in order to more fully evaluate this
25 alternative. 5:50PM

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1 Q And when you're doing these remedial alternatives, 5:50PM
2 I assume part of your profession is you try to
3 anticipate and factor in the potential ripple effects
4 of a course of action?
5 A The concept that I used for this report was the 5:51PM
6 circle of guidance, you know, or putting together
7 feasibility studies so I tried to incorporate the usual
8 methodologies and procedures within that -- within that
9 framework.
10 Q To what extent did you consider the effects of the 5:51PM
11 cessation of the utilization of poultry litter as a
12 fertilizer in the Illinois River Watershed, besides
13 what are stated in your report and that is your
14 contention that phosphorus laws wouldn't be reduced?
15 MR. BLAKEMORE: Object to the form. 5:51PM
16 Q What other effects did you consider?
17 MR. BLAKEMORE: Object to the form.
18 A Again, cessation was primarily focused on the
19 reduction of phosphorus and reduction of the other
20 injuries. 5:51PM
21 Q Do you consider how it would affect the yield of
22 forage in the watershed?
23 A I did not directly.
24 Q Did you consider how it might affect cattle
25 stocking rates on pasture in the watershed? 5:52PM

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1 A No, I did not. 5:52PM
2 Q Did you consider how it might affect the density
3 and health of ground cover, which is protecting soil
4 from erosion in the watershed?
5 A No. 5:52PM
6 Q Did you have any discussions with the Oklahoma
7 Department of Agriculture, Food and Forestry regarding
8 your specific proposal for cessation of the land
9 application of poultry litter?
10 A Not that I recall. 5:52PM
11 Q Did you have that discussion with Oklahoma State
12 University Agricultural Extension Service?
13 A Not that I recall.
14 Q The transporting of poultry litter to a landfill,
15 sir, did you identify a specific target landfill for 5:52PM
16 your cost modeling?
17 A I believe I did, but I can't recall the name of
18 it. It was off your expert witness table.
19 Q Is it in the watershed?
20 A I don't recall if it was one of the ones that was 5:53PM
21 in the watershed or not, but I did look at the mileage
22 associated with that.
23 Q Did you have any communication with the operators
24 of that landfill?
25 A I did look at specific landfills near the 5:53PM

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1 watershed and made a determination that there was 5:53PM
2 sufficient capacity to accept poultry waste and the
3 type of quantities we're talking about, but I didn't --
4 I might have talked with the landfill operator.
5 Q You might have? 5:53PM
6 A Might have.
7 Q You don't have any specific recollection?
8 A I recall -- I recall talking to a landfill
9 operator. Which one, I can't recall.
10 Q Did you talk to any of these landfill operators to 5:53PM
11 verify that their landfill would, in fact, accept
12 significant volumes of poultry litter?
13 A I don't think so.
14 Q Does organic material like poultry litter that
15 contains poultry manure, does that present a potential 5:54PM
16 management problem for a landfill operator?
17 A I think it presents both issues and opportunities
18 if you look at natural gas recovery and regeneration.
19 Certainly there are aspects to organic material that
20 would provide opportunities for energy production. 5:54PM
21 Q This is not something that was part of your
22 investigation, though, is that correct?
23 A No.
24 Q Do you have any expertise in geomorphology, sir?
25 A I can hum a few bars, but I'm no expert. 5:55PM

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TODD KING, VOL I, 7-22-08

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1 Q You are? 5:55PM
 2 A I understand in general the concepts, but I'm not
 3 an expert.
 4 Q Now, these vegetative buffers, if I understand
 5 your report and your testimony thus far today, you are 5:55PM
 6 proposing that any grassland or pastureland abutting a
 7 stream should have a 100-foot vegetative buffer
 8 installed whether or not that grassland or pasture has
 9 received poultry litter?
 10 A For the purposes of how the costs were developed, 5:55PM
 11 I believe that statement is true.
 12 Q Okay. So the physical attributes of that riparian
 13 land is not relevant to your analysis other than it's
 14 grassland or pastureland?
 15 A Right. I was unable to incorporate that level 5:56PM
 16 detail.
 17 Q The surface runoff that you contemplated would
 18 reach that buffer --
 19 A Uh-huh.
 20 Q -- how far does it -- how far would it come from? 5:56PM
 21 A That depends on the field that it abutts.
 22 Q But it's relatively local?
 23 A Yeah.
 24 Q Okay. I mean, that water is not coming from a
 25 mile away? 5:56PM

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1 MR. BLAKEMORE: Object to the form. 5:56PM
 2 A Again, I haven't looked at that specific issue,
 3 but --
 4 Q Well, generally a riparian buffer is a local
 5 conservation -- 5:56PM
 6 A Yeah.
 7 Q -- tool --
 8 A Yes.
 9 Q -- for -- to deal with those local lands at that
 10 area, you agree? 5:56PM
 11 A Yes.
 12 Q Okay. The Exhibit 4, sir, which was the e-mails
 13 that were packaged up and I will just -- I will just
 14 let you look at this one, it will save us the time from
 15 you digging around. It's Exhibit 4 and it's Bates 5:57PM
 16 No. King C-O-R-R, and then it's 206.0001. Appears on
 17 its face to be from you to Ms. Xidis on April 11, 2008.
 18 And I believe you confirmed you did -- that you were
 19 the author of this. Tell me what that -- what that --
 20 what that means. Read your text loud and then explain 5:57PM
 21 what it means to me.
 22 A "Attached, please find the first draft.
 23 Sections 1 through 3 are firming up, 4 is a disaster
 24 and 5 is just an outline. Please review and let me
 25 know a good time to talk Monday. Thanks, Todd." 5:57PM

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1 Q Okay. It's marked. All right. Explain, sir, 5:57PM
 2 where you said, "Sections 1 through 3 firming up, 4 is
 3 a disaster." That's not a happy word. so what does
 4 that mean?
 5 A Oh, I was being a bit too informal in terms of my 5:58PM
 6 communication. I was just commenting on my own
 7 disappointment of the status of where I was at with
 8 Section 4.
 9 Q What was Section 4?
 10 A I think at that time, I believe it was the -- 5:58PM
 11 Q Let me show you that and see if that helps you.
 12 That's from your Exhibit 10. I believe you said that
 13 was your draft table of contents.
 14 A Yeah, I can't remember -- yeah, same detailed
 15 evaluation of remedial alternatives. 5:58PM
 16 THE REPORTER: I'm sorry.
 17 A Detailed evaluation of remedial alternatives.
 18 Q Why was it a disaster?
 19 A It just wasn't as far along as I would have liked.
 20 I just hadn't drafted as much as I would have liked at 5:58PM
 21 that point in time.
 22 Q Were you having problems drafting that section?
 23 A Just my time availability.
 24 Q And that section was not ultimately incorporated
 25 within the final report, correct? 5:59PM

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1 A No, no, it's here -- no. I mean, it's here. 5:59PM
 2 Q But in your final report, you elected not to
 3 provide a definitive?
 4 A It's a preferred remedy. That would be like
 5 Section 6, I think, in that. 5:59PM
 6 Q All right. Did you, in fact, draft a Section 6?
 7 A No, I never got that far.
 8 Q So how far did you get on that topic?
 9 A This is -- what you see is however I got in this
 10 report. 5:59PM
 11 Q Sir, your work that you've done that we've talked
 12 about all day long, who was the -- the lead person
 13 directing that work?
 14 A Besides me or?
 15 Q I assume you had to answer to someone, you had to 6:00PM
 16 test your ideas and get approval from someone. Who was
 17 that?
 18 A I'd say Dr. Olsen.
 19 Q And what role did -- did the attorneys play in the
 20 work that you did? 6:00PM
 21 A I guess, in terms of discussions with them or -- I
 22 mean, they were interested in what we were concluding,
 23 the analysis, the costs associated with it, the
 24 assumptions we needed, how we were interfacing between
 25 the various experts, if there is any information we 6:00PM

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TODD KING, VOL I, 7-22-08

<p style="text-align: right;">Page 250</p> <p>1 needed to complete our work to achieve the deadline, 6:01PM 2 those types of issues. 3 Q Sir, did -- are you aware of any board or board of 4 trustees for any of the drinking water systems in the 5 Illinois River Watershed that passed any resolution 6:01PM 6 asking the state or Camp, Dresser and McKee to pursue 7 upgrades of their plants from the poultry company? 8 MR. BLAKEMORE: Object to form. 9 A I'm not aware of any. 10 Q All right. 6:01PM 11 MR. McDANIEL: How much -- are we about 12 gone here? 13 THE VIDEOGRAPHER: Yeah. 14 MR. McDANIEL: All right. I'm good. I 15 left five minutes on the table, which pains me, you 6:01PM 16 won't believe. 17 MR. PAGE: Not according to my watch, 18 Scott. 19 MR. McDANIEL: I've got five to 6:00. 20 THE VIDEOGRAPHER: This concludes the 6:01PM 21 deposition of Todd King. The time is now 6:02 p.m. 22 MR. ELROD: Let's be clear, you said it 23 concludes, it concludes today? 24 THE VIDEOGRAPHER: Yeah. 25 MR. ELROD: We'll take a recess, not 6:02PM</p>	<p style="text-align: right;">Page 252</p> <p style="text-align: center;">SIGNATURE PAGE</p> <p>1 2 3 I, Todd King, do hereby certify 4 that the foregoing deposition was presented to me by 5 Marlene Percefull as a true and correct transcript of 6 the proceedings in the above-styled and numbered cause, 7 and I now sign the same as true and correct. 8 9 Witness my hand this _____ day of 10 _____, 2008. 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25</p> <p style="text-align: center;">Todd King</p> <p style="text-align: center;">SUBSCRIBED AND SWORN TO before me</p> <p>17 18 19 this _____ day of _____, 2008. 20 21 22 23 24 25</p> <p style="text-align: center;">Notary Public</p> <p>My Commission Expires:</p>
<p style="text-align: right;">Page 251</p> <p>1 conclude. Thanks. 6:02PM 2 (Whereupon, the deposition was continued 3 at 6:02 p.m.) 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25</p>	<p style="text-align: right;">Page 253</p> <p style="text-align: center;">C E R T I F I C A T E</p> <p>1 2 3 STATE OF OKLAHOMA) 4) ss. 5 COUNTY OF TULSA) 6 I, Marlene Percefull, Certified Shorthand 7 Reporter within and for Tulsa County, State of 8 Oklahoma, do hereby certify that the above-named 9 witness was by me first duly sworn to testify the 10 truth, the whole truth and nothing but the truth in the 11 case aforesaid, and that I reported in stenograph his 12 deposition; that my stenograph notes were thereafter 13 transcribed and reduced to typewritten form under my 14 supervision, as the same appears herein. 15 I further certify that the foregoing 252 16 pages contain a full, true and correct transcript of 17 the deposition taken at such time and place. 18 I further certify that I am not attorney 19 for or relative to either of said parties, or otherwise 20 interested in the event of said action. 21 WITNESS MY HAND AND SEAL this ____ day 22 of July, 2008. 23 24 25</p> <p style="text-align: center;">Marlene Percefull, CSR CSR No. 01818</p>

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TULSA FREELANCE REPORTERS
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CORRECTIONS TO THE DEPOSITION OF
TODD KING, VOL. I

PAGE AND LINE NUMBER	CORRECTION

July 31, 2008

Mr. David Page
Attorney at Law
502 West 6th St.
Tulsa, Oklahoma 74119

Re: Depo of Todd King, Vol I

Dear Mr. Page:
Enclosed please find your copy of the above referenced deposition. Also enclosed you will find the original signature page and correction sheet for the deposition. Please have Mr. King review his deposition, make any corrections on the correction sheet and sign the original signature page in front of a Notary Public. As soon as this procedure has been completed, please return the original signature page and the correction sheet to me.

If you have any questions, please contact me.

Sincerely,

Marlene Percefull, CSR

IN THE UNITED STATES DISTRICT COURT FOR THE
NORTHERN DISTRICT OF OKLAHOMA

W. A. DREW EDMONDSON, in his)
capacity as ATTORNEY GENERAL)
OF THE STATE OF OKLAHOMA and)
OKLAHOMA SECRETARY OF THE)
ENVIRONMENT C. MILES TOLBERT,)
in his capacity as the)
TRUSTEE FOR NATURAL RESOURCES)
FOR THE STATE OF OKLAHOMA,)
Plaintiff,)
vs.) 4:05-CV-00329-TCK-SAJ
TYSON FOODS, INC., et al,)
Defendants.)

VOLUME II OF THE VIDEOTAPED
DEPOSITION OF TODD KING, produced as a witness
on behalf of the Defendants in the above styled and
numbered cause, taken on the 30th day of January,
2009, in the City of Tulsa, County of Tulsa, State
of Oklahoma, before me, Lisa A. Steinmeyer, a
Certified Shorthand Reporter, duly certified under
and by virtue of the laws of the State of Oklahoma.

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I N D E X

W I T N E S S P A G E
T O D D K I N G

Cross Examination by Mr. Blakemore 259
Redirect Examination by Mr. McDaniel 270
Signature Page 300
Reporter's Certificate 301

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(Whereupon, the deposition began at
9:01 a.m.)

VIDEOGRAPHER: We are now on the Record for
Volume II of the deposition of Todd King. Today is
January 30th, 2009. The time is 9:03 a.m. Would 09:01AM

counsel please identify themselves for the Record?
MR. BLAKEMORE: Bob Blakemore for the State
of Oklahoma.

MR. BULLOCK: Louis Bullock for the State
of Oklahoma. 09:01AM

MR. McDANIEL: Scott McDaniel for Peterson
Farms, Inc.

MS. HILL: Theresa Hill for the Cargill
defendants.

VIDEOGRAPHER: And on the phone? 09:02AM

MR. SANDERS: Bob Sanders for the Cal-Maine
defendants.

MR. ELROD: John Elrod, Simmons Foods.

MS. TUCKER: K. C. Tucker for the George's
defendants. 09:02AM

MR. BOND: Michael Bond for Tyson Foods,
Tyson Poultry, Tyson Chicken and Cobb-Vantress.

VIDEOGRAPHER: Thank you.

TODD KING

having first been duly sworn to testify the truth,

2 (Pages 255 to 258)

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1 the whole truth and nothing but the truth, testified
2 as follows:

3 CROSS EXAMINATION

4 BY MR. BLAKEMORE:

5 Q Good morning, Mr. King. Mr. King, if you'll 09:02AM
6 remember, the defendants took your deposition back
7 in July, and we're back here today so that the State
8 may conduct its cross examination. Do you
9 understand that?

10 A Yes. 09:02AM

11 Q During your direct, you testified that you
12 prepared your expert report before you had
13 physically visited the IRW. Do you recall that
14 testimony?

15 A Yes. 09:02AM

16 Q Is there a reason why you did not visit the
17 IRW prior to drafting your report?

18 A Yes. The timing of the project and my
19 involvement in the project and the task that I was
20 to accomplish and the large number of experts that 09:03AM
21 were already in place from the various firms and
22 entities, I was able to accomplish my task without
23 needing to go out to the site.

24 Q So did you feel it was necessary to visit the
25 IRW before drafting your report? 09:03AM

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1 A No.

2 Q Okay. You also testified several times during
3 direct that you did not yourself conduct an
4 independent investigation. Do you recall that
5 testimony? 09:03AM

6 A Yes.

7 Q In the context of your testimony, what was
8 your understanding of the phrase independent
9 investigation?

10 A Well, I was confused by the phrase independent 09:04AM
11 investigation because it was a collaborative
12 assignment. I was working with the State's experts,
13 as well as experts from my firm, and I was caught up
14 on the independent -- I wasn't working alone. I was
15 working in collaboration with those folks, so -- 09:04AM

16 Q Okay, but did you actually conduct any part of
17 the field investigation?

18 A No. I was not part of the field team, but
19 that's not uncommon for this type of assignment.

20 Q In your experience when conducting a remedial 09:04AM
21 alternative analysis, what are some of the types of
22 materials you typically rely on?

23 A Well, in addition to the literature search,
24 past experience, things like preexisting reports,
25 remedial investigations, summary reports, risk 09:05AM

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1 assessments, things along those lines, but there's a
2 variety of work products that all feed into remedial
3 alternatives evaluation.

4 Q Is it common to rely on the work of other
5 experts when conducting a remedial alternative 09:05AM
6 analysis?

7 A Yes. I mean, you are always relying on a wide
8 variety of input.

9 Q And is that what you did here?

10 A Yes. 09:05AM

11 Q Okay. You also testified that the potential
12 for human health risks from the ingestion of surface
13 water was not a focus of your report. Do you recall
14 that testimony?

15 A Yes. 09:05AM

16 Q Is the potential for human health risks from
17 ingestion of surface water addressed anywhere in
18 your report?

19 A Yes.

20 Q And how is it addressed? 09:06AM

21 A Well, it's one of the identified injuries. I
22 guess I was a little confused at that point in the
23 deposition because I was -- one of the assumptions
24 going into the report was the cessation of poultry
25 waste. So the amount of time I spent in terms of 09:06AM

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1 evaluating that particular effort, I got confused
2 with the word focus and wasn't quite understanding
3 or was misinterpreting the question I guess.

4 Q Is -- but is the -- that issue, human health
5 risks and ingestion -- from the ingestion of surface 09:06AM
6 water, a significant injury in your opinion?

7 A Yes.

8 MR. McDANIEL: Object to the form.

9 Q And, again, what is the remedy which you
10 believe will address that issue? 09:07AM

11 A The primary remedy for addressing the
12 bacteriological ingestion of surface water was the
13 cessation of poultry application to the land within
14 the Illinois River watershed.

15 Q Okay. You also testified on direct that you 09:07AM
16 have never heard from anyone within the State that
17 chicken litter in Oklahoma is not being managed in
18 accordance with applicable laws and regulations. Do
19 you recall that testimony?

20 A Yes. 09:07AM

21 Q Did anyone from the State ever ask you to
22 investigate whether poultry waste is being managed
23 in accordance with applicable laws and regulations?

24 A No.

25 Q Have you ever investigated whether poultry 09:07AM

3 (Pages 259 to 262)

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1 waste is being managed in accordance with applicable
2 laws and regulations?
3 A No.
4 Q Was the issue of whether poultry waste was
5 being managed in accordance with applicable laws and 09:08AM
6 regulations within the scope of your expert report?
7 A No.
8 Q You also testified on direct as to the
9 effectiveness of vegetative filter strips or buffer
10 strips. Do you recall that testimony? 09:08AM
11 A Yes.
12 Q At one point you testified that properly
13 constructed and maintained, vegetative filter strips
14 would remove 85 percent of the phosphorus that would
15 otherwise reach the river. Do you recall that 09:08AM
16 testimony?
17 A Yes.
18 Q What was the basis of that 85 percent number?
19 A Well, that was -- I think in the report we
20 actually used a range of values, but the basis of 85 09:09AM
21 percent was a well-constructed vegetative filter
22 strip under kind of test conditions as Chaubey and
23 others have put in their various research reports.
24 Q So was that based on a particular paper?
25 A I think I've got it in the references here. 09:09AM

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1 There's definitely the Chaubey report, Effectiveness
2 of Vegetative Filter Strips in Controlling Losses of
3 Surface Applied Poultry Waste Constituents and
4 Others, but similar reports.
5 Q Is that 85 percent number in your opinion 09:09AM
6 achievable without the cessation of the land
7 application of poultry waste?
8 A Probably not, no, because the continued
9 application of phosphorus to the land is -- you
10 know, a vegetative filter strip only has a finite 09:10AM
11 capacity to absorb phosphorus. So if you continue
12 to land apply poultry waste, then the phosphorus
13 continues to run off the field, and the vegetative
14 filter strip will be overcome by the amount of
15 phosphorus running through it, and the overall 09:10AM
16 effectiveness is going to decrease, so that 85
17 percent will go down and be less effective.
18 Q Okay. You also testified on direct that you
19 are not in a position to make a definitive
20 recommendation on the lake. Do you recall that 09:10AM
21 testimony?
22 A Yes.
23 Q Why would you not be in a position to make a
24 definitive recommendation on the lake?
25 A Well, I think, as we stated in the report or 09:11AM

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1 as I stated in the report, we evaluate, you know, a
2 comprehensive range of different alternatives for
3 addressing the remedies, for addressing the injuries
4 to the watershed, and some of the alternatives we
5 screened out; some of the alternatives we retained 09:11AM
6 and put together cost estimates for, and then yet
7 other alternatives we identified as requiring
8 additional information. So at the end of this
9 report, I don't have one definitive preferred
10 alternative that would address the lake. There's 09:11AM
11 several alternatives that are viable, and additional
12 work needs to be done to fill the data gaps for the
13 identified alternatives that we hadn't -- that we
14 still have data gaps for and then to also optimize
15 and select the best alternative or series of 09:12AM
16 alternatives that will address all the remedies for
17 the watershed.
18 Q Okay. Do you have a view as to when that
19 additional assessment work would be done?
20 A In the future, but I don't have a timeline 09:12AM
21 or -- I would hope that this would be taken up by
22 all the parties and advanced because, you know, this
23 is a point in time, and I think we've advanced the
24 ball to a certain point, but now we need to continue
25 to look at injuries and look at the viable 09:12AM

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1 alternatives and develop probably a combination of
2 solutions to address the injuries.
3 Q Could that kind of work, that kind of
4 assessment work be part of a remedy fashioned by the
5 court? 09:13AM
6 A Sure, yes.
7 Q You also testified that you are not directly
8 offering any opinion as to the success of any of the
9 remedial alternatives proposed in your report. Do
10 you recall that testimony? 09:13AM
11 A Yes.
12 Q What did you mean by not directly?
13 A Well, again, I was confused by the definition
14 of success, and the way I was interpreting it, I
15 understood success to be achievement of basically 09:13AM
16 the remedies, that the injuries had been removed.
17 So on that basis, I couldn't go there, but if we
18 talk about success in terms of did we identify
19 viable alternatives, then by that definition of
20 success, then, yes. I mean, the whole report is 09:14AM
21 titled Identification and Evaluation of Viable
22 Remediation Alternatives. So we were successful in
23 saying that some of these alternatives would be
24 effective, but I did not come up with a
25 comprehensive remedy that results in remediation of 09:14AM

4 (Pages 263 to 266)

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<p style="text-align: right;">Page 267</p> <p>1 all the injuries.</p> <p>2 Q So in your mind, success is removal of the --</p> <p>3 removal of the injury?</p> <p>4 MR. McDANIEL: Object to the form.</p> <p>5 MR. BOND: Objection. 09:14AM</p> <p>6 A When I answered the question, that was my</p> <p>7 interpretation of success, but I guess -- again, I</p> <p>8 think the report states what I meant to say. I</p> <p>9 guess I just got confused.</p> <p>10 Q You also testified on direct that you assumed 09:15AM</p> <p>11 that the farmers or growers owned the poultry waste.</p> <p>12 Do you recall that testimony?</p> <p>13 A Yes.</p> <p>14 Q Do you in fact know who owns the poultry</p> <p>15 waste? 09:15AM</p> <p>16 A No.</p> <p>17 Q Did anyone from the State ask you to determine</p> <p>18 who owns the poultry waste?</p> <p>19 A No.</p> <p>20 Q Has anyone from the State ever expressed an 09:15AM</p> <p>21 opinion to you as to who owns the poultry waste?</p> <p>22 A Not that I recall.</p> <p>23 Q Was ownership of the waste pertinent to your</p> <p>24 analysis?</p> <p>25 A No. I mean, that doesn't factor in. 09:15AM</p>	<p style="text-align: right;">Page 269</p> <p>1 but I would not knowingly say we needed to replace a</p> <p>2 non-contaminated well.</p> <p>3 Q So there are some data gaps, and you made an</p> <p>4 estimate?</p> <p>5 A Yeah. I'm not sure I would call it a data 09:17AM</p> <p>6 gap. I made an estimate. I took a sampling of 60</p> <p>7 wells and extrapolated that to the rest of the wells</p> <p>8 within the watershed.</p> <p>9 Q Do you typically make those kinds of estimates</p> <p>10 in performing your work in doing remedial 09:18AM</p> <p>11 alternative analysis?</p> <p>12 A Yes. I mean, it's impossible to sample every</p> <p>13 single cubic inch of soil that you are thinking</p> <p>14 about remediating. So you are always taking a</p> <p>15 sample of a subset of a population and making an 09:18AM</p> <p>16 estimate. So that's standard practice.</p> <p>17 Q Okay, and what was the purpose or the purposes</p> <p>18 of doing that well water replacement estimate in</p> <p>19 this case?</p> <p>20 A To develop a cost estimate for the replacement 09:18AM</p> <p>21 to develop the number of wells that would be</p> <p>22 replaced.</p> <p>23 Q Okay, and is that potentially replaced?</p> <p>24 A Yeah.</p> <p>25 Q Okay. Back to the issue of success, do you 09:19AM</p>
<p style="text-align: right;">Page 268</p> <p>1 Q Okay. Do you recall testifying on direct</p> <p>2 about drinking water well replacement?</p> <p>3 A Yes.</p> <p>4 Q And the replacement of contaminated wells is</p> <p>5 one of the possible remedial alternatives you 09:16AM</p> <p>6 proposed; correct?</p> <p>7 A Yes.</p> <p>8 Q At one point you testified that you did not</p> <p>9 know whether you're making a recommendation for the</p> <p>10 replacement of wells that are non-contaminated. Do 09:16AM</p> <p>11 you recall that testimony?</p> <p>12 A Yes.</p> <p>13 Q Can you explain why you would not know whether</p> <p>14 you're making a recommendation for the replacement</p> <p>15 of wells that are non-contaminated? 09:16AM</p> <p>16 A Obviously I was confused a bit on that point,</p> <p>17 but the way we -- the way I estimated the percentage</p> <p>18 of wells that would be candidates for replacement</p> <p>19 was to look at the subsampling of the 60 wells that</p> <p>20 CDM had accomplished, looking at the exceedances for 09:17AM</p> <p>21 the various parameters in those 60 wells, and then</p> <p>22 using that ratio and extrapolating that to the</p> <p>23 entire population of wells within the Oklahoma side</p> <p>24 of the Illinois River watershed. So I was thinking</p> <p>25 about statistical inference and things like that, 09:17AM</p>	<p style="text-align: right;">Page 270</p> <p>1 have any opinion as to the effectiveness or</p> <p>2 potential effectiveness of the remedial alternatives</p> <p>3 that you chose to retain?</p> <p>4 A Yeah. The effectiveness was one of the</p> <p>5 criterias -- criteria that we used for evaluating 09:19AM</p> <p>6 the various alternatives. So those alternatives</p> <p>7 that were retained or those alternatives that were</p> <p>8 retained with a note that additional data was</p> <p>9 required were deemed to be effective; otherwise, we</p> <p>10 wouldn't have retained them. 09:19AM</p> <p>11 Q Okay. Are there any alternatives that were</p> <p>12 eliminated because they wouldn't be effective?</p> <p>13 A Yeah, I believe so.</p> <p>14 Q Okay.</p> <p>15 MR. BLAKEMORE: That's all I have. 09:20AM</p> <p>16 MR. McDANIEL: Your last answer, was that</p> <p>17 yes?</p> <p>18 A Yes.</p> <p>19 REDIRECT EXAMINATION</p> <p>20 BY MR. McDANIEL: 09:20AM</p> <p>21 Q Mr. King, I'm Scott McDaniel. Let's see.</p> <p>22 Since your -- tell me what work you've done in this</p> <p>23 case since you gave your prior deposition.</p> <p>24 A I think I've reviewed a few reports, but I</p> <p>25 haven't advanced this document any. 09:20AM</p>

5 (Pages 267 to 270)

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1 Q Okay. When you said this document, can you be
 2 specific as to what you are referring to?
 3 A I haven't advanced the identification and
 4 evaluation of viable remedial -- remediation
 5 alternatives to address injuries related to the -- 09:20AM
 6 to land disposal of poultry waste within the
 7 Illinois River watershed.
 8 Q Okay. That document was originally marked, I
 9 believe, as Exhibit 2 to your first deposition. Is
 10 that correct to your knowledge? 09:21AM
 11 A Yes.
 12 Q Okay. So just so the Record is clear on what
 13 your prior answer was, the scope of work described
 14 in Exhibit 2, your report, you have not advanced
 15 that work product. Is that your testimony? 09:21AM
 16 A Correct.
 17 Q All right. You said you looked at some
 18 reports. Can you tell me what you looked at?
 19 A Some reports prepared by your experts.
 20 Q Some of the defense experts? 09:21AM
 21 A Yeah.
 22 Q Identify them, if you can, please.
 23 A Dicks and Rausser I think and Maguire I got
 24 two days ago.
 25 Q Okay. Those are the only ones? 09:21AM

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1 A Yes, that I can recall.
 2 Q All right. Did you select which of the
 3 defendants' expert reports to review or were they
 4 provided to you by someone else?
 5 A Provided to me. 09:21AM
 6 Q By whom?
 7 A Somebody working for David Page.
 8 Q Can you be specific, please?
 9 A I can't remember the name.
 10 Q Are you suggesting an administrative person? 09:22AM
 11 A Yes, sir.
 12 Q Someone working for Mr. Page?
 13 A Yes, sir.
 14 Q Okay. Anything else you reviewed between your
 15 deposition and today besides those two reports? 09:22AM
 16 A Not that's coming to mind, no.
 17 Q Have you performed any other tasks of any kind
 18 related to this work involving the Illinois River
 19 watershed other than what we've already discussed?
 20 A I worked with some cost estimates but that 09:22AM
 21 was -- I can't remember the scope of those.
 22 Q Tell me what you're talking about, sir.
 23 A There was a discussion with David on some
 24 alternative costs, but I'm just drawing a blank as
 25 to what they were. 09:22AM

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1 Q Well, alternative costs for remedial work?
 2 I'm not following you at all. I need more
 3 information.
 4 A I know, but I can't -- I can't -- I'm just
 5 drawing a blank. I can't bring it up. 09:23AM
 6 Q When did you -- or when were you asked to
 7 perform this work?
 8 A Oh, it's got to be six months ago at least.
 9 Q Okay. Did you actually create any -- perform
 10 any analysis or create any type of work product? 09:23AM
 11 A No.
 12 Q Is there a task still pending that you need to
 13 complete for Mr. Page or anyone else?
 14 A No. It was more along the lines of just
 15 answering some questions. 09:23AM
 16 Q Do you have any open assignments right now
 17 that you're expected to perform related to this
 18 lawsuit or related to the assessments in the
 19 Illinois River watershed?
 20 A Just review of the two reports. 09:23AM
 21 Q Okay, but is there anything -- oh, you're
 22 saying -- let me back up. Is there anything going
 23 forward from today that you know that you're going
 24 to -- that you have been expected to perform related
 25 to this case? 09:24AM

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1 A Just comments on those, the two expert
 2 reports.
 3 Q Okay. Providing some comments back to the
 4 attorneys on those reports?
 5 A Right. 09:24AM
 6 Q Okay. To your knowledge, are you going to be
 7 expected to offer comments on any of the other
 8 reports other than Dicks, Rausser and Maguire?
 9 A I don't know.
 10 Q Does that mean not to your knowledge? 09:24AM
 11 A I don't know, not to my knowledge, yes.
 12 Q Okay. Now, tell me about communications and
 13 things you have performed in order to prepare for
 14 reconvening your deposition today. Describe all
 15 communications and meetings, E-mails, discussions. 09:24AM
 16 A The only E-mails were basically to book hotel
 17 reservations and confirming the date, and then the
 18 only meetings were Bob and I met last night and
 19 briefly this morning just to go over the testimony
 20 that he was going to ask me questions on. 09:25AM
 21 Q Okay. So the two of you sat down and went
 22 over your prior testimony?
 23 A Uh-huh.
 24 Q Yes?
 25 A Yes. 09:25AM

6 (Pages 271 to 274)

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1 Q Okay, and you discussed issues that needed to
2 be addressed today or you expected to be addressed
3 today?
4 A Yes.
5 Q Okay. Did you meet with anybody else? 09:25AM
6 A No, sir.
7 Q Okay. In that discussion you had with Mr.
8 Blakemore, did he tell you what he anticipated
9 asking you today?
10 A Yes. 09:25AM
11 Q Okay. Obviously the testimony that you've
12 given thus far this morning, to my ear it sounded
13 like you were trying to clear up issues you had with
14 your prior testimony?
15 MR. BLAKEMORE: Object to the form. 09:26AM
16 A Yes, sir.
17 Q Okay. So is it correct for me to assume if
18 you and Mr. Blakemore haven't discussed an aspect of
19 your prior testimony, that you are satisfied with
20 the remainder of your prior testimony? 09:26AM
21 MR. BLAKEMORE: Object to the form.
22 A No. I have not reviewed my deposition. So
23 I'm not sure if there's other things in there that I
24 would like to clarify after I review it.
25 Q As you sit here with us today, are there any 09:26AM

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1 other aspects of your deposition testimony you gave
2 in Volume I of your deposition that you feel are
3 incorrect and need to be corrected?
4 A Yes.
5 Q What? 09:26AM
6 A I believe the cost estimates in Table 7 and 8
7 I will need to revise.
8 Q Specifically what topics do those address?
9 A Upgrade of the water treatment plants.
10 Q And they need to be revised why? 09:27AM
11 A I believe I need to research where I drew the
12 information from and make sure I accurately
13 estimated what I was trying to estimate.
14 Q Was your attention drawn to this analysis as a
15 consequence of the expert report of Dr. Maguire? 09:27AM
16 A Yes, sir.
17 Q Anything else?
18 A Not that I can think of.
19 Q Your testimony this morning that human health
20 risk associated with the ingestion of surface water 09:27AM
21 is a significant injury, it is not your -- you did
22 not specifically develop an expert opinion that
23 there is a human health risk existing in the
24 Illinois River watershed, did you, Mr. King?
25 A I relied on the analysis of the State's 09:28AM

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1 experts.
2 Q All right. So what I want to be clear about
3 is opinions that you hold and you have developed
4 based upon not only your education and experience
5 but your investigation in this case, as 09:28AM
6 distinguished from where you may be relying on
7 someone else's expertise.
8 A Uh-huh.
9 Q Okay? I want to make sure you understand the
10 point of my question. With that in mind, you do not 09:28AM
11 personally, as an environmental engineer, you have
12 not developed an opinion that you are going to offer
13 at trial that there is a human health risk present
14 in the Illinois River watershed; correct?
15 A If asked that question, I would say that there 09:28AM
16 is a human health risk.
17 Q But you have not as an environmental -- I
18 mean, you're not a toxicologist?
19 A No, sir.
20 Q We went through this; right? 09:29AM
21 A Yes, sir.
22 Q You're not an epidemiologist?
23 A No, sir.
24 Q You're not a human health risk specialist, are
25 you? 09:29AM

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1 A Not per se but --
2 Q All right. You're requiring -- excuse me.
3 You are relying on the work of Dr. Teaf; correct?
4 A Yes.
5 Q Is there someone else you are relying on for 09:29AM
6 the human health risk opinions being offered in this
7 case?
8 A No.
9 Q All right. So let's get back to my question.
10 When we go to trial, are you, based upon your 09:29AM
11 experience, training, education and expertise, going
12 to offer the opinion that there is a human health
13 risk presented in the Illinois River watershed
14 caused by the land application of poultry litter?
15 A Yes, I'm going to offer that, but it's going 09:29AM
16 to be based on my consultation with the State's
17 experts.
18 Q All right. Is it going to be based solely
19 upon the opinions offered by Dr. Teaf?
20 A To the best I can think of, yes. 09:30AM
21 Q All right. You testified in response to some
22 of Mr. Blakemore's questions that your opinion is
23 that the remedy to this human health risk is the
24 cessation of the land application of poultry litter;
25 am I correct? 09:30AM

7 (Pages 275 to 278)

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1 A That was one of the remedies, yes.
 2 Q All right. Tell me what work you conducted to
 3 determine the specific effects on human health risks
 4 that would result from the cessation of the land
 5 application of poultry litter. 09:30AM
 6 A Basically literature review of the die-off
 7 potential for bacteria in the soil column.
 8 Q Okay. When we -- when you speak of human
 9 health risk and poultry litter, is bacteria the
 10 constituent of concern? 09:31AM
 11 A Well, I mean, we identified bacteria, or we
 12 simplified the issues to bacteria, nitrogen and
 13 phosphorus, so those three combined.
 14 Q Are you saying all three of those constituents
 15 are presenting a human health risk? 09:31AM
 16 A Potentially.
 17 Q Potentially or they are?
 18 A Yes, they are.
 19 Q Okay, and you're relying -- I don't want to
 20 circle back around but we got to be clear. You are 09:31AM
 21 relying on Dr. Teaf for that?
 22 A No. I mean, I'm not relying on Dr. Teaf
 23 solely for that.
 24 Q Who are you relying on -- or excuse me.
 25 What's the basis of your opinion that nitrogen is 09:32AM

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1 presenting a human health risk in the Illinois River
 2 watershed as it relates to the land application of
 3 poultry litter?
 4 A I'm relying on the -- primarily the survey of
 5 the 60 wells that CDM prepared. 09:32AM
 6 Q That tested for total nitrogen?
 7 A Right. Well, they tested for various
 8 components of nitrogen.
 9 Q And you're aware that none of the other
 10 experts offered by the State of Oklahoma have 09:32AM
 11 offered an opinion there's a human health risk
 12 associated with total nitrogen; just you?
 13 MR. BLAKEMORE: Object to the form.
 14 A I guess I'm not aware.
 15 Q Okay. Has specifically Dr. Teaf told you 09:32AM
 16 there is a human health risk associated with total
 17 nitrogen in water?
 18 A No.
 19 Q Okay. Can you point to any other of the
 20 State's experts who has told you there is a human 09:33AM
 21 health risk associated with nitrogen or any nitrogen
 22 compound in the Illinois River watershed associated
 23 with the land application of poultry litter?
 24 A Not at this time.
 25 Q So your opinion that the remedy of cessation 09:33AM

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1 of the land application of poultry litter, that it
 2 would be effective to address this human health
 3 risk, is based upon literature that you reviewed;
 4 correct?
 5 MR. BLAKEMORE: Object to the form. 09:33AM
 6 A I'm sorry, could you restate the question?
 7 Q Okay, sure. Your opinion that the remedy of
 8 cessation of the land application of poultry litter
 9 would address the human health risk from the
 10 ingestion of surface water in the Illinois River 09:34AM
 11 watershed is based upon literature that you
 12 reviewed?
 13 A Yes.
 14 Q Anything else?
 15 A Not that I can recall. 09:34AM
 16 Q And what literature in particular are you
 17 referring to?
 18 A Gerba, Fate of Wastewater Bacteria and Viruses
 19 in Soil. That's the one I cited anyway.
 20 Q Okay, the Gerba article. Is the primary 09:35AM
 21 principle you're basing your opinion on is this
 22 notion that bacteria levels in the water will be
 23 decreased if poultry litter land application is
 24 terminated?
 25 A Yes. 09:35AM

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1 Q And I believe you testified in your prior
 2 deposition that you have not -- you cannot testify
 3 or you cannot offer the expert opinion as to what
 4 percentage of bacteria detected in the waters in the
 5 Illinois River watershed derived from the land 09:36AM
 6 application of poultry litter; that's not your area,
 7 is it?
 8 A I can't testify to that, yes.
 9 Q Okay. The notion that stopping litter
 10 application, that it would address the human health 09:36AM
 11 risk from the ingestion of surface water, is one of
 12 the primary assumptions in that opinion that that
 13 bacteria at issue does in fact emanate from the land
 14 application of poultry litter?
 15 A Yes. 09:36AM
 16 MR. BLAKEMORE: Object to the form.
 17 Q Mr. Blakemore asked you questions about buffer
 18 strips or vegetative filter strips. If I call that
 19 a buffer strip, are you okay with that term?
 20 A Yes, sir. 09:37AM
 21 Q This question of achievability of 85 percent
 22 removal of total phosphorus I believe was the topic
 23 of your discussion. You stated that you think that
 24 85 percent effectiveness is not achievable unless
 25 litter application is terminated; am I correctly 09:37AM

8 (Pages 279 to 282)

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1 stating your opinion?
 2 A Yes. I mean, that's my opinion.
 3 Q All right. What's the basis for that opinion?
 4 A Well, the basis for the 85 percent
 5 effectiveness is that under test conditions, you've 09:37AM
 6 got so much phosphorus coming in. The filter strip
 7 takes up the phosphorus through the plant growth and
 8 deposition of the phosphorus within the filter
 9 strip, and then 15 percent of the loading ends up
 10 moving on or into the river. 09:38AM
 11 Based on the work that Dr. Engel conducted
 12 with the modeling and the literature review, if you
 13 continue -- I mean, it's just like the fields
 14 themselves. They've continued to receive phosphorus
 15 in excess of the agronomic need. A filter strip is 09:38AM
 16 taking up phosphorus through -- mainly through the
 17 agronomic action. If you continue to apply
 18 phosphorus in excess, the phosphorus will go through
 19 the control mechanism. The mechanism has to be
 20 designed to accept the phosphorus. If the 09:38AM
 21 phosphorus continues to increase, the mechanism will
 22 fail or the control system will fail.
 23 Q Can you explain to me how Dr. Engel's work in
 24 this case relates to this opinion you just -- or
 25 this prior answer? 09:39AM

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1 A It doesn't directly relate. It's more of he
 2 used that in his model.
 3 Q Have you reviewed any literature that tested
 4 the scenario you discussed, in other words, the
 5 differences in the effectiveness of vegetative 09:39AM
 6 filter strips or buffer strips under scenario one,
 7 which would be no land application of poultry
 8 litter, versus scenario two, which would be
 9 continued application of poultry litter?
 10 A Well, within the constraints of the fixed 09:39AM
 11 timeline of the tests that were conducted, yes.
 12 Q Okay. Which literature is that?
 13 A There's a variety of them.
 14 Q That directly compare the effectiveness of
 15 buffer strips between scenarios of no land 09:39AM
 16 application as compared to with application?
 17 A Yes.
 18 Q Okay. Point those out to me, please.
 19 A I'd have to go back to the reports, but
 20 Chaubey, Effectiveness of Vegetative Filter Strips 09:40AM
 21 Controlling Losses of Surface-Applied Poultry Waste.
 22 I'd have to go back and research it. I can't
 23 recall.
 24 Q Just give me your best answer you can today
 25 based upon what you recall. 09:40AM

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1 A I mean, if I -- without going back and reading
 2 the reports, I'm just going to tell you something
 3 that I can't verify until I've looked at the
 4 reports, but, I mean, you can look at the reference
 5 list and see which one of those apply. 09:40AM
 6 Q Have you ever personally conducted any --
 7 either any research, and I mean like practical
 8 research or testing, involving vegetative filter
 9 strips or buffers?
 10 A No, I've not conducted any studies personally. 09:41AM
 11 Q Have you -- as an engineer in the
 12 environmental field, have you been involved in
 13 designing vegetative filter strips or buffer strips
 14 to address non-point source phosphorus loading from
 15 agricultural fields? 09:41AM
 16 A Non-point source from agricultural fields?
 17 Not directly, no.
 18 Q To your knowledge has there been any -- excuse
 19 me. Strike that. Do you understand that the
 20 potential effectiveness of a buffer strip can vary 09:41AM
 21 with site-specific conditions?
 22 A Yes, sir.
 23 Q And what would those site-specific conditions
 24 be that could affect the effectiveness of a
 25 vegetative filter strip or buffer strip? 09:42AM

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1 A Topography, soil type, what type of vegetation
 2 you're using, water quality. Just a variety of
 3 parameters.
 4 Q Could the -- I'm sorry?
 5 A A variety of parameters. 09:42AM
 6 Q Could the propensity for the particular site
 7 in question to actually result in runoff make a
 8 difference?
 9 MR. BLAKEMORE: Object to the form.
 10 Q I understand that was probably confusing. You 09:42AM
 11 agree that based upon soil and other physical
 12 parameters, some sites may be more prone to have a
 13 runoff; all rain conditions being the same, some
 14 sites will run off where some may not run off?
 15 A Yes, sir. 09:43AM
 16 Q Would that physical characteristic also
 17 influence the effectiveness of buffer strips?
 18 A Yes, sir.
 19 Q Okay. Now, to your knowledge, has there been
 20 any site-specific testing of those different effects 09:43AM
 21 of the site-specific characteristics in the Illinois
 22 River watershed on the effectiveness of vegetative
 23 filter strips or buffer strips?
 24 A Not that I can recall.
 25 Q Mr. Blakemore asked you a series of questions 09:43AM

9 (Pages 283 to 286)

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1 regarding the inability at this time to select a
2 preferred recommendation for Tenkiller Reservoir?
3 A Yes, sir.
4 MR. BLAKEMORE: Object to form.
5 Q Or that -- maybe the words that were used, at 09:44AM
6 this time you cannot make a definitive
7 recommendation for the lake I think is how it was
8 put.
9 A Yes, sir.
10 Q Do you agree that is your current testimony? 09:44AM
11 A Yes, sir.
12 Q All right. Let's look at that part of your
13 report, if we could, please. See it at Page 19.
14 Actually, let's look at Page 18, your Opinion
15 3.2.3.2, treatment. 09:44AM
16 A Yes, sir.
17 Q This discussion beginning there and continuing
18 for the next page or two, that is part of the
19 potential alternatives for Tenkiller Reservoir;
20 correct? 09:45AM
21 A Yes, sir.
22 Q On Page 19, one of these potential treatments
23 you discussed is P inactivation with alum, aluminum
24 sulfate; correct?
25 A Yes, sir. 09:45AM

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1 Q This specific potential remedy or remedial
2 step is one that you are not recommending to be
3 implemented at this time; is that correct?
4 A I categorized it as requires additional
5 investigation and assessment. 09:46AM
6 Q And does that mean that you cannot recommend
7 it at this time based upon the current data in hand?
8 A Yes.
9 Q To your knowledge, has anyone done a technical
10 evaluation of the feasibility of treating Tenkiller 09:46AM
11 Reservoir with alum?
12 A No, no, not that I can think of.
13 Q This alum treatment, you also mention it on
14 Page 12 of your report with regard to treatment of
15 soils and Page 16 with potential treatment of the 09:46AM
16 river. Do you recall that?
17 A Yes.
18 Q And is it also correct, Mr. King, that for
19 each -- these other two medium, that being the soils
20 and the river, that that is not a remedial action 09:47AM
21 that you have sufficient data in order to recommend
22 at this time?
23 A Where are we on the report, please?
24 Q Sure. Let's see. Let's look at Page 12 for
25 the soils. If you need me to break that question 09:47AM

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1 down, I will. I'm not trying to confuse you.
2 A Okay, please.
3 Q So I'll strike that question.
4 A Okay.
5 Q On Page 12 you discuss alum treatment as also 09:47AM
6 a potential remedial action for soils.
7 A Yes.
8 Q And your conclusion was, requires additional
9 investigation and assessment?
10 A Yes, sir. 09:47AM
11 Q Does that mean, based upon the information you
12 have in hand today, you cannot recommend that
13 remedial action?
14 A Yes, sir.
15 Q To your knowledge has anyone conducted any 09:47AM
16 technical evaluation in the Illinois River watershed
17 of the effectiveness of alum treating of soils in
18 the watershed?
19 A Could you say that one more time?
20 Q Sure. To your knowledge are you aware of 09:48AM
21 anyone that has done a specific technical evaluation
22 of the effectiveness of alum treating soils in the
23 Illinois River watershed?
24 A As part of -- as part of the literature or as
25 part of the work that we're currently doing? 09:48AM

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1 Q As part of the assessment associated with this
2 litigation.
3 A I know Dr. Gordon has -- Dr. Gordon Johnson
4 has worked with alum. I just don't know where, if 09:49AM
5 that was within the watershed or not. I don't know
6 the answer.
7 Q Well, within your capacity as the individual
8 working with the State to identify, assess and
9 enumerate remedial options, you have not seen or
10 been involved in that type of study, that is, the 09:49AM
11 effectiveness of alum treatment of IRW soils?
12 A No.
13 Q Okay. Now, with regard to the river, I
14 believe Page 16, you mention that -- if you want to
15 take a second and look at that. I believe you 09:49AM
16 discuss it near the top of the page if you want to
17 take a minute to reread your paragraph.
18 A P inactivation with alum?
19 Q Yes, sir. First, tell me if you agree with
20 me, this is -- deals with what you call the 09:49AM
21 riverine, which what you mean is the river; correct?
22 A Yes, sir.
23 Q Okay, and in the case of alum treatment of the
24 river system, your recommendation is that this
25 technology not be retained; is that true? 09:50AM

10 (Pages 287 to 290)

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1 A Yes.

2 Q And in the way -- in your language in the way

3 you discuss these remedies, if it's not retained, in

4 your opinion it's rejected?

5 A I'm not sure I understand the difference. 09:50AM

6 Q Okay. It's not going to be considered and

7 wouldn't be recommended?

8 A Correct.

9 Q Period?

10 A Correct. 09:50AM

11 Q Okay, and there will be no further assessment

12 of non-retained remedies?

13 A Yes.

14 Q Okay. The discussion you had with Mr.

15 Blakemore where you said you were confused by the 09:51AM

16 discussion in your prior deposition that used the

17 word the success, in quotation marks, the word

18 success, you say in your deposition you interpreted

19 that word incorrectly?

20 MR. BLAKEMORE: Object to form. 09:51AM

21 Q I'm trying to understand what the confusion

22 is.

23 A The phrase success, when I was in the

24 deposition last time, was, I guess in my mind,

25 saying that the remedies had been identified and 09:52AM

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1 that we had achieved all the remedial action

2 objectives that were related to the injuries, so

3 that there were no further injuries, and that

4 definition of success, I couldn't identify, you

5 know, any remedy or remedies that met that 09:52AM

6 definition of success.

7 Q Okay. If -- within that context, is the word

8 effectiveness of the remedies, is that a more

9 precise word?

10 A I would say that the remedies that were 09:52AM

11 retained were retained in part because they were

12 effective to some degree.

13 Q Okay. You considered that your role in this

14 case, identifying remedies and screening remedies,

15 was successful? 09:52AM

16 A Yes.

17 Q All right, but you're not in a position to

18 offer opinions about the overall effectiveness of

19 the retained remedies?

20 MR. BLAKEMORE: Object to the form. 09:53AM

21 Q Is that correct?

22 A Well, the retained remedies are effective.

23 Q Conceptually?

24 A Conceptually, but the -- what combination of

25 remedies and, you know, I didn't try and quantify 09:53AM

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1 some overall percent effectiveness for any

2 combination of the remedies. Am I answering the

3 question?

4 Q You are, and I appreciate that. To your

5 knowledge, has anyone on the team of technical 09:53AM

6 experts that are working on this case for the State

7 of Oklahoma, have any of them undertaken a

8 data-driven evaluation of the effectiveness of the

9 remedies you are recommending be retained in your

10 report? 09:54AM

11 A Well, Dr. Engel did some model runs that

12 address some of the remedies, yes.

13 Q Okay, and I understand that. Anything else?

14 A Not that's coming to mind, no.

15 Q The discussion with Mr. Blakemore about the 09:54AM

16 replacement of contaminated wells, using your

17 language --

18 A Yes.

19 Q -- if the number of wells you recommend be

20 either replaced or receive treatment -- let me put 09:54AM

21 this differently. The number of wells for which you

22 recommend some remedial action in the Oklahoma

23 portion of the Illinois River watershed, you have

24 that set out in your report?

25 A Yes. 09:54AM

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1 Q X number of wells for nitrogen, X number of

2 wells for bacteria; correct?

3 A Yes, sir.

4 Q And you have -- you're saying you base that

5 upon an extrapolation of the 60 wells that were 09:55AM

6 sampled?

7 A Yes, sir.

8 Q Okay. You testified about that in your other

9 deposition. I don't want to take you through that

10 other than to ask you, with regard to that total 09:55AM

11 number of wells in each of those two categories that

12 you say require some remedial work, are you in a

13 position to tell the court and the jury how many of

14 those total number of wells are in fact contaminated

15 or not either by nitrates or bacteria? 09:55AM

16 A Beyond the estimate that I made, I mean, do I

17 have other information that would tell me for sure?

18 Q Well, can you answer the question I asked and

19 then if we need to ask a follow-up, I will. Can

20 you -- let's do this a little differently. Let's -- 09:56AM

21 A Okay.

22 Q Of the -- the two water well scenarios, one

23 grouping is 190 wells. 190 wells will require some

24 remedial action if litter cessation is ordered?

25 A Yes. 09:56AM

11 (Pages 291 to 294)

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1 Q And 980 wells will require some remedial
2 action if the land application of poultry litter is
3 not undertaken. Am I correct?
4 A Yes, I believe so.
5 Q Okay. Under the scenario -- I mean, both of 09:56AM
6 those numbers, 190 wells and 980 wells, are both
7 based upon an extrapolation; it's an estimate;
8 correct?
9 A Yes.
10 Q All right. Under scenario one, which is the 09:57AM
11 cessation of the land application of poultry litter,
12 of the 190 wells you used in your cost estimation,
13 will you be in a position, sir, to state to a
14 reasonable degree of scientific certainty how many
15 of those 190 wells are in fact contaminated and will 09:57AM
16 require some remedial action?
17 MR. BLAKEMORE: Object to form.
18 A The scientific certainty will be related to
19 the 60 wells that CDM sampled that were used to make
20 that estimate, that that -- I don't have other 09:57AM
21 information other than the 60 wells.
22 Q Okay. With all due respect, I need to ask you
23 to answer the question I asked.
24 MR. McDANIEL: Lisa, could you read it
25 back, please? 09:58AM

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1 MR. BLAKEMORE: Object to the form.
2 (Whereupon, the court reporter read
3 back the previous question.)
4 MR. BLAKEMORE: Same objection.
5 A Yes. I mean, that's my estimate, 190 wells. 09:58AM
6 Q To a reasonable degree of scientific
7 certainty, that will be the degree of accuracy of
8 your testimony that you will submit to the court?
9 A I could put confidence limits on it, but
10 that's my estimates. 09:58AM
11 Q All right. What are the confidence limits?
12 A I haven't calculated those, but --
13 Q All right. With regard to the 980 wells used
14 in your cost estimate under the scenario where the
15 land application of poultry litter is not 09:58AM
16 terminated, will you be able to testify to a
17 reasonable degree of scientific certainty that all
18 980 of those wells are in fact contaminated and
19 require remedial action?
20 MR. BLAKEMORE: Object to form. 09:59AM
21 A With the same caveat as the answer on the 190.
22 Q Okay. Have you calculated the confidence
23 intervals associated with that assessment?
24 A No.
25 Q All right, and just I don't want to get lost 09:59AM

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1 in the wording here. When you say confidence
2 interval, if I use the term error rate, is that
3 synonymous to you or not?
4 A I'd prefer the use of confidence interval.
5 Q All right. Can you recite for me what the 09:59AM
6 error rate is associated with the estimate of 190
7 wells for cessation of litter and 980 wells for no
8 cessation of litter?
9 A You'll have to define error rate for me.
10 Q Has there been any testing done to validate 09:59AM
11 that the number of 190 and 980 are sound estimates?
12 MR. BLAKEMORE: Object to form.
13 A Again, the estimates -- I mean, I document
14 where I arrived at the estimates from.
15 Q Okay. Have -- and you testified in your prior 10:00AM
16 deposition that the 60 wells that were sampled were
17 not selected to statistically represent the entirety
18 of the groundwater in the Oklahoma portion of the
19 Illinois River watershed; correct?
20 A I am not sure what the sampling design was for 10:00AM
21 the 60 wells.
22 Q Okay. So you're not going to change that
23 testimony today?
24 A No.
25 Q And you cannot speak to whether or not those 10:00AM

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1 60 wells do in fact represent all the groundwater in
2 the Oklahoma portion of the Illinois River
3 watershed; correct?
4 A Correct.
5 MR. McDANIEL: I'm sure there will be 10:00AM
6 questions on the phone, so we might as well change
7 the tape.
8 VIDEOGRAPHER: We are now off the Record.
9 The time is 10:03 a.m.
10 (Following a short recess at 10:01 10:01AM
11 a.m., proceedings continued on the Record at 10:05
12 a.m.)
13 VIDEOGRAPHER: We are back on the Record.
14 The time is 10:07 a.m.
15 MR. McDANIEL: Subject to follow-up 10:05AM
16 examination if you're going to ask more questions,
17 I've talked to all the defendants, and the
18 defendants tender the witness.
19 MR. BLAKEMORE: Nothing further.
20 MR. McDANIEL: Okay. Then we're done. 10:05AM
21 MR. BLAKEMORE: We'll read and sign.
22 VIDEOGRAPHER: This concludes the
23 depositing of Todd King. We are now off the Record.
24 The time is 10:07 a.m.
25 (Whereupon, the deposition was 10:05AM

12 (Pages 295 to 298)

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1 concluded at 10:05 a.m.)
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1 C E R T I F I C A T E
 2

3 STATE OF OKLAHOMA)
 4) ss.
 5 COUNTY OF TULSA)
 6

6 I, Lisa A. Steinmeyer, Certified
 7 Shorthand Reporter within and for Tulsa County,
 8 State of Oklahoma, do hereby certify that the above
 9 named witness was by me first duly sworn to testify
 10 the truth, the whole truth and nothing but the truth
 11 in the case aforesaid, and that I reported in
 12 stenograph his deposition; that my stenograph notes
 13 were thereafter transcribed and reduced to
 14 typewritten form under my supervision, as the same
 15 appears herein.

16 I further certify that the foregoing 47
 17 pages contain a full, true and correct transcript of
 18 the deposition taken at such time and place.

19 I further certify that I am not attorney
 20 for or relative to either of said parties, or
 21 otherwise interested in the event of said action.

22 WITNESS MY HAND AND SEAL this 2nd day of
 23 February, 2009.
 24

25 LISA A. STEINMEYER, CRR
 CSR No. 386

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1 SIGNATURE PAGE
 2

3 I, Todd King, do hereby certify that the
 4 foregoing deposition was presented to me by Lisa A.
 5 Steinmeyer as a true and correct transcript of the
 6 proceedings in the above styled and numbered cause,
 7 and I now sign the same as true and correct.

8 WITNESS my hand this _____ day of
 9 _____, 2009.
 10
 11
 12

13 _____
 14 TODD KING
 15
 16

17 SUBSCRIBED AND SWORN TO before me this
 18 _____ day of _____, 2009.
 19
 20
 21

22 _____
 23 Notary Public
 24
 25

23 My Commission Expires:
 24 _____
 25

1 CORRECTIONS TO THE DEPOSITION OF
 2 TODD KING

3 Volume II

4 PAGE AND LINE NUMBER

CORRECTION

13 (Pages 299 to 302)

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